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Side of Lasea.

J.Hallhart imp

KALOUS LIMIONAS OR FAIR HAVENS.

TRAVELS AND RESEARCHES

IN

CRETE.

BY

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CHAPTER I.

KALOI LIMENES OR FAIR HAVENS—INTEREST FELT ON APPROACHING IT—THE DESCRIPTION OF THE HAVEN AND THE ISLETS FORMING IT—RUINS OF AN EARLY CHURCH DEDICATED TO ST. PAUL—THE PROBABLE SPOT CHOSEN BY ST. PAUL DURING HIS STAY TO PREACH TO THE NATIVES—LOCAL TRADITION OF HIS VISIT TO FAIR HAVENS—DISCOVER THE SITE OF LASEA—AN ANCIENT CAUSEWAY—UNFORTUNATE ATTACK ON SUPPOSED PIRATES BY AN ENGLISH FRIGATE.

KALOI LIMENES, or Kalous Limiónas*, is a bay and group of islets five and a half miles west of Cape Leon, an anchorage we sought for with great anxiety as we proceeded along the coast, both for the shelter we hoped it would afford us as a rendezvous during the examination of this and the adjacent part of Crete, and for the hallowed interest connected with it as the "Fair Havens" whence St. Paul departed on his voyage of prognosticated peril, in which he encountered the Euroclydon soon after leaving for the port of Phœnice, and which terminated in his shipwreck upon the island of Melita or Malta. It was also an undescribed locality previous to our visit; for Dr. Pococke only heard of it when in the neighbourhood,

* Its local name.

and Pashley, or his artist, only looked down upon it in passing over the neighbouring hills. The lively interest felt, therefore, when first approaching the islets forming the Fair Havens, for the twofold reason above mentioned, can be well comprehended, more particularly as at the time of our approach the weather was somewhat threatening, although it was the beginning of May. And we were highly gratified to find a bay capable of affording us the shelter we needed, as I had a small cutter as tender, and also two rowing-galleys, then engaged upon the survey of the adjacent coast.

Kalous Limionas is chiefly used, and is safe as an anchorage, during the summer months only, and undoubtedly must have received the appellation of the Good or "Fair Havens" by comparison with the less sheltered bays on the south coast of Crete. It is situated within two or three islets lying off the west side of a long bay (see the frontispiece), and is open to the east and south-east. Here there is an indentation about one cable and a half in depth, between two rocky points about the same distance apart. It has two sandy beaches, and is the special haven for the small coasting-craft that seek shelter in the bay. The south-west cape forming this bay is a bold and picturesque headland, terminated to the east by a perpendicular cliff of limestone. On its summit is a coastguardman's look-out house, a miserable hut of loose stones, in which a human being can hardly sit

upright; but a watchman is constantly kept there to report to the Aga of Debaki, the chief village of the district, the arrival or passing of any vessel.

Similar guards or look-outs are perched upon the most conspicuous eminences along the whole coast of Crete, at distances of eight or ten miles apart, whose beacon-fires blaze up at dusk, if a vessel comes in sight, in order to warn the neighbouring villages and authorities that a strange sail is off the coast. It is doubtless a custom handed down from the earliest times, especially when piracy was frequent; but it is kept up now mainly to prevent smuggling.

This headland has very deep water close alongside of it, with a large cavern at its base, the favourite retreat of hundreds of blue rock-pigeons, who breed in the many holes and crevices within it.

At exactly a cable's length, or 200 yards, to the east of this bluff is an island, about a quarter of a mile in length; this island, called St. Paul's in our chart, but simply Megalonisi, or the large island, by the natives of the locality, is bold all round, and forms the main shelter of the haven or anchorage for ships of large burthen, such as that in which St. Paul was when he warned the captain not to depart from the bay. To the south of the bluff is another island, more lofty, and peaked, which serves also as a break-water against the gales from the south-west. A vessel anchored within the haven, and made fast to the for-

mer island, would consequently find shelter against more than three quarters of the compass; but as the east and south-east winds blow direct into the bay, it would be both inconvenient and unsafe in winter for any vessel not particularly well found in anchors and cables, and not well secured to the island itself. The position of St. Paul's ship was probably that of the 'Spitfire,' shown in the view of this very interesting locality given in the frontispiece, which will help the reader to realize the principal facts related of the apostle's stay at Fair Havens.

To the north-east of the anchorage within the Megalonisi, or St. Paul's Island, are several white and black rocks or islets, which add, by their contrast of colour, to the picturesque character of the bay; and each of them may be approached very close by the largest ship. The centre islet is a black basaltic rock, rising from a perpendicular depth of nearly fifty feet beneath the surface of the water to twenty feet above it, and by its presence accounting for the disturbance of the strata forming the hills surrounding the bay and for their varied colour.

I now call the reader's attention to an interesting relic. Upon the dark slaty ridge rising immediately over the western bay forming the haven or usual anchorage of the small coasting-vessels that touch here, we unexpectedly found the ruins of a Greek chapel, still dedicated to St. Paul—Agios Pavlos—

perhaps marking the very spot where the apostle himself used to preach to the natives of Crete when the gospel was first planted there by him during the ship's stay. A small part of the site of the old church, enclosed by four low walls of loose stones (about four feet above the ground), and therefore entirely open to the heavens, is still used by the natives as a chapel. At its east end two broken columns, one serving as an altar and the other as a stand for a lamp, and the fragment of an earthen jar for incense are indications of its present sanctity. A few Greek letters are inscribed upon one of the columns, but are fragmentary and unintelligible.

Its commanding position, upon the brow of the hill overlooking the picturesque haven, naturally led to the impression that the spot might have been specially selected by the apostle on that account, as well as presenting convenience for preaching to many hearers.

I must confess that we were all gratified to find that a chapel dedicated to St. Paul, however rude, was still in existence here, and that it was occasionally used as such by the few shepherds of the neighbourhood and the priest of a neighbouring monastery, regarding it as an evidence of the visit of the great apostle here, and of the locality being certainly the "Fair Havens" mentioned in the 27th chapter of the Acts. For not a habitation but the hut of the guardian is near, and no cultivated spot; an impres-

sive solitude and wildness reigns upon the scene around. The olive-tree, however, grows neglected on the steep slaty ridges rising immediately to the west and north-west of the chapel, indicating that they were once cultivated, and that the bay then presented a more fertile aspect.

Several fragments of marble, and the foundations of the walls, show that the older church or chapel was a goodly edifice; and as the foundations of some other buildings surround the sacred spot, these seem to have been a monastery or small hamlet in the early Christian ages,—more probably the former; for the land is now monastery property, and there are two or three monasteries amongst the neighbouring hills, the nearest being about an hour's walk distant.

The hegumenos being compelled by the government to maintain the watch at Kalous Limiónas at his own expense, the two guards there are Greeks, and belong to this monastery. One of them has been attached as a lay brother for eighteen years, and, being rather intelligent, is communicative upon the monastic teaching and traditions respecting St. Paul's visit to the place. The following is a specimen of his biblical knowledge after so long a connexion with the monastery, and attendance at the daily church service:—"The old book tells us," he said, "that St. Paul came here when returning from Rome (!), and, whilst lighting a fire on the shore, he was bitten by a

serpent; but it did him no harm, although very venomous. From that time all the snakes in Crete were charmed by St. Paul, and became harmless." This, then, is the native explanation of the singular fact of there being no venomous reptiles in the island of Crete at the present time, as in Malta, although they are found in all the other Greek islands; snakes, however, do exist in Crete, but, as in Malta, they are harmless.

I shall now refer to the town of Lasea, which, in the 8th verse of the 27th chapter of the Acts, is mentioned as being nigh unto Fair Havens. Having proceeded to the small island called Draphos (or Traphos), about one mile east of the haven, to make the sketch of the bay given in the frontispiece, I found on it (as on all the islands off here) the temporary habitations of many of the Cretan Greeks of the neighbourhood, who took shelter on them during the revolution for independence.

Draphos lies very close to the shore of Crete; but I was surprised to find, besides the modern houses upon it, that an ancient causeway extended towards it from the main, without joining it, a passage having been left, evidently to allow the local craft to shift to either side as the changes of the south wind and sea might render necessary. This causeway is shown in the view before mentioned, which was taken from the ridge or plateau immediately above it, on the slope descending from which there is a patch of terraced

ground that is partially tilled by a Sfakian shepherd, whose mandri or sheepfold is above it. The only name of the locality, however, is simply the Metoki, or farm, it being the only cultivated spot for several miles. Surprised at thus accidentally discovering the ancient mole, I was also surprised to find on the cultivated terraces some vestiges of ancient buildings, and near the beach under them a massive piece of Roman wall with brickwork, which seems to have been a part of a sea defence or facing to support the embankment there. For none of the priests of the neighbouring monastery nor any of the natives had told me of such remains, although I had made frequent inquiries.

Doubtless, then, this must be the site of Lasea, the Thalassea of some later transcribers—thus accidentally discovered after I had sought in vain for it elsewhere, not expecting to find it so near to the haven. Whilst here, after finishing my sketch, I bought from a shepherd-boy, who had recently found it near an ancient tomb upon the site, a plain gold ring, with the following inscription on it,

ΤΡΥΦ
ΗΝΙΑ,

in which, however, the letters Ρ and Ν are placed the reverse way. It seems to designate a Cretan female named very nearly the same as one of two females to whom St. Paul, in the 16th chapter of his Epistle to the Romans, sends salutation as being sisters in the

faith and "labourers in the Lord," and regarding whose exact dwelling-place, origin, and history there is an uncertainty, but concerning whom the Church has always cherished a natural curiosity. The Tryphena of the Epistle cannot, however, have been a convert of St. Paul's when he was at Lasea, even if she were a Cretan lady, as the Epistle was written from Corinth before Paul went to Crete. The discovery of the ring and of this name as being that of a Greek lady of the place, however, is interesting, and helps to confirm the existence of an ancient city here, which, from its situation, must have been the Lasea spoken of in the Acts.

Lasea has a Roman coin assigned to it as Thalassea in Mionet's 'Description of Ancient Medals,' although it could never have been more than a small coast-town. We may perhaps recognize also in this island or rock of Traphos, off the town, the Lisse Petra of Homer (Odyssey, xvii. 293), since there is no similar islet or rock on the west side of Cape Littinos, where it has been more generally looked for; and Lisse is a name that could easily become Lasea in later mouths and later writings; and the rock would probably give its name to the town that existed or arose in connexion with it.

It was off one of these islets at Fair Havens that the boats' crews of one of our frigates, viz. H.M.S. 'Cybele,' suffered considerably in an attempt to seize some supposed piratical boats that were shel-

tered under them, during the revolutionary war against the Turks. But the natives now declare, in defence of their conduct, that the islands were then only occupied by them as places of refuge from the Turks whenever they overran the valley of the Messara (it certainly is a fact that they were so occupied occasionally), and that the boats which the frigate desired to cut out and destroy were kept merely to enable them to pass to and from the mainland, when safe to do so, for the cultivation of the soil or for the gathering of the crops, and not for piracy. Happily (if this be true), they neither lost any of their lives in the unfortunate affair, nor their boats; for, without these, they and their families would have been left to starve upon these barren rocks. On the other hand, their resort to force instead of explanations rather indicates that it was in defence of a bad instead of a good cause; and appearances are strongly in favour of the view that piracy, for sustenance and the support of their cause, was also an object of their occupation of the islands on this unfortunate occasion; for the frigate's boats lost an officer and several men from the fire of the Greeks, who, being hid behind rocks, were incapable of being seen and dislodged by the return-fire from the English, and the latter were in consequence compelled to retreat to the frigate, then lying becalmed in the distance, without effecting their object.

CHAPTER II.

LEAVE FAIR HAVENS FOR MESSARA BAY—ENCOUNTER A "MELTEM" OR SUMMER GALE, THE SAME IN CHARACTER AND DIRECTION AS THE WIND ENCOUNTERED BY ST. PAUL'S SHIP—COMMENTS IN EXPLANATION OF THE "EUROCLYDON" AND OF ST. LUKE'S DESCRIPTION OF THE COURSE TO PHŒNICE — METALLUM — ROMAN FORTRESS—ROCK TOMBS — PANAGIA CHAPEL — AGIA FOTIA THE SITE OF PHÆSTUS—ACROPOLIS—COINS.

A GALE from the south-east having obliged me to put to sea from "Fair Havens" a few days after my arrival, and to remain in the offing for twenty-four hours, till it had veered round as usual to the south-west, and the sea abated, when I again returned; but being anxious to know how the little tender 'Auxiliar,' in Mr. Wilkinson's charge, and the surveying-boats, with Lieut. Mansell, then engaged in the survey of the Bay of Messara, had weathered it, I put to sea again as soon as it was apparently calm enough to communicate with them—being tempted by a calm morning at the Fair Havens to get up steam and weigh anchor for this purpose. Part of my course was just that which the captain of St. Paul's ship desired to steer in making for the port of Phœnice to the south-west of Crete (against the advice of Paul), since, to reach this port, it was necessary to sail rather

close to the Cretan coast, and St. Luke says, "When the south wind blew softly, supposing they had obtained their purpose, loosing thence, they sailed close by Crete" (Acts, xxvii. 13).

Thus the captain of the Alexandrian ship being dependent upon *fair winds* in those days (as are the junks of the Chinese in the present, which his ship must have somewhat resembled in rig and form), he was tempted to loose from "Fair Havens" on experiencing a light southerly wind in that port, and to proceed upon this route for Phœnice—exactly as we also were tempted on this occasion, by a calm and still morning after the southerly gale, to start from it for the head of the Messara Bay. For a few light cat's-paws only were then crossing the anchorage, sometimes from the north and sometimes from the south; and not anticipating anything like a coming norther by these indications, or by the appearance of the sky, which was bright and clear, I put to sea, and proceeded round Cape Littinos, under a small grade of steam, in order to economize my coal, and then upon turning it opened the fine Bay of Messara, or Debaki, and stood direct towards its head and Mount Ida. The steam, however, had soon to be increased in consequence of the rapidly increasing strength of a northerly breeze, which I now found I had to contend against to reach the head of the bay; and before I had advanced as far as abreast of the narrow serrated

island of Paximada, standing in the middle of the bay, it blew a perfect hurricane from the north ; and Mount Ida, whose summit, when first opened to our view on turning the cape from the Fair Havens, was towering in the sky, white with its winter capping of snow, but with a dense zone of woolly-looking clouds encircling it for the next 3000 feet below the snow-line and making it appear twice as high as when free from them, was now wholly enveloped in these clouds, they having ascended to its crest and also increased in density and depth.

From previous experience this appearance fully warned us that a violent norther or "*meltem*" was at hand, and we soon after felt its force in the terrific squalls which occasionally swept across the bay. However, steam was superior to wind, and we steadily, though slowly, pursued our way against them, but not without lighting up more boilers and generating more steam; and while thus pressing on through it, the white "spoon-drift" that occasionally covered the bay as a sheet of foam, or rose as a whirling column of spray, dashed over our bows and bulwarks, wetting all fore and aft; but on we went, struggling against it for two more hours, and in the very eye of the wind as it blew direct from Mount Ida towards Cape Littinos; and at noon we reached an anchorage off the small Bay of Eremopóli, at the mouth of the Amari valley, immediately under the mountain.

It will no doubt be perceived by the reader, who has been induced to follow me with St. Paul to Fair Havens, that we had, in all probability, under nearly similar circumstances, in respect to the *character*, force, and direction of the wind, encountered a "Euroclydon"—the very wind which proved so disastrous to St. Paul's ship on attempting to cross the bay for the western harbour of Phœnice, and which has given rise to so much difficulty and to so many learned dissertations upon the meaning of the term, by scholars and commentators upon the voyage and shipwreck of the great apostle, most of whom have concluded that the direction, and not the *character*, of the wind was intended by the word "Euroclydon" in St. Luke's record of its effect upon the ship. The impression that we were encountering this very wind naturally struck me at the time; for a long experience of the winds of the Levant enables me to state that, as in most other places, this locality (that is, the Greek archipelago and Crete) has its peculiar local winds, the most violent and most constant being from certain points only. The "meltem" (a local term known throughout the archipelago amongst Greek and Turkish Levantine sailors for a violent northerly gale) is one of them; it generally rises very suddenly, without many clouds to warn the navigator, some few mountains only being capped by them as monitors of its coming to the experienced local mariner.

It is especially dreaded for the violence of its squalls on the leeward side of all high land; for they have the character of what nautical men call "white squalls," from giving little or no warning until felt, and are truly "typhonic" in effect, from the whirling columns of wind and spray they then lift from the surface of the sea.

But the term "meltem," whatever its origin (it appears to be nautical Turkish, but to have been originally Arabic), is applied more especially to those northerly gales which occur mostly in the summer season, and in the north of the Levant, in the same manner as the "Euroclydon" was probably, in the days of St. Paul, the mariners' term for the same wind, with its peculiar "white squalls," in the southern part of it, and was thus known to his sailor scribe, St. Luke, or the captain of the Alexandrian ship. It was encountered, however, at a different season to the proper "meltem;" but their direction and character are nearly the same at the same localities in both seasons. For as the trend and elevation of continents and land generally tends to influence the direction of local winds, and as these features have remained unchanged since those days, the direction and character of the locally prevalent and peculiar winds experienced at the present time must undoubtedly explain those in the past, in the time of St. Paul.

The "meltem," or northerly gale of summer, is a

wind that blows invariably throughout the Levant from between north north-west and north north-east by compass—that is, from about N. 30° W. to N. 15° E. true. For in the northern part of the archipelago its direction is more generally from between north and north north-east; but in the southern part, and in Crete, its direction is invariably from between north north-west and north, true. And the northerly gales of winter, especially those that are of the greatest violence, are also limited to the same points; they are one and the same wind, therefore, in a general sense, in respect to character and direction, and it is exactly the same in this respect as the Etesian wind of ancient authors; yet the term Etesian was not applicable to the winter gale encountered by St. Paul, as is obvious. The term "meltem," however, is not general in its application in the Levant to both the winter gales from the north and the summer periodical ones from the same direction. Yet if a foreign navigator, in describing such a winter gale, were to term it a "meltem," its direction and character would be locally well understood, although this name properly belongs only to the northerly gales of summer.

It has, however, been supposed by many learned commentators that the term "Euroclydon" meant an east north-east wind, as the middle between the Greek point *euros* and the Latin *aquilo*, of which it was

apparently compounded; others early rejected this explanation, as the learned Jacob Bryant and Dr. Shaw. This term has also been supposed to have been derived from a compound of the Greek words signifying the easterly winds and waves. All commentators, therefore, previously to our survey and experience of the winds, had concluded that it was an easterly, a north-east or east north-east wind; but in fact such a wind rarely blows on the south side of Crete with violence. Besides, had the "Euroclydon" been from that point, it would have been fair for sailing to Phœnice from Fair Havens, since it would have been about $3\frac{1}{2}$ points abaft the beam even after rounding Cape Littinos; and moreover, although blowing from the land still, it would have been a more steady wind from that direction than from the north, in consequence of not descending from any high mountain, but crossing the Messara Bay over the lowlands of the Messara valley—that is, until after passing the island of Gavdo or Clauda, which it is quite evident St. Paul's ship had not done when caught in the Euroclydon.

But, in truth, the *direction* of the typhonic wind experienced by St. Paul seems, to my humble judgment as a navigator, to be explained by St. Luke himself in the words, "*there arose against it*" (which is the interpretation, in our version, of the original, κατ' αὐτῆς, and no other is needed); for the course the vessel must steer to reach Phœnice from Fair Havens,

after passing Cape Littinos, was that which was naturally uppermost in the mind of the captain when endeavouring to fetch Phœnice, and no doubt of St. Luke also when he wrote "*there arose against it a tempestuous wind, called the Euroclydon,*" as appears evident from his having just before noticed that this was "their purpose" in loosing from Fair Havens with the south wind, as it would carry them on their direct course to Phœnice. I think, moreover, that what St. Luke says in the twelfth verse, in reference to Phœnice—"*which is an haven of Crete, and lieth towards the south-west and north-west*"—implies the directions in which the vessel must steer to reach it, viz. towards south-west for some little distance after leaving Fair Havens, and then north-west after passing Cape Littinos. It seems to me, therefore, that the disputed κατ' αὐτῆς, or "against it," refers neither to the vessel nor the island of Crete, as generally supposed by previous commentators, but to the *direct course* to Phœnice.

Now a wind at north by compass (that is, N. 10° W. true), which, I am sure, is the invariable direction of a gale in that locality, both in winter and summer, would be adverse to the direct course between Fair Havens and Phœnice after passing Cape Littinos—in fact, "against it" for a vessel dependent upon sails, such as were then used. That course being N. 60° W. true, would be only $4\frac{1}{2}$ or 5 points from the wind.

Not even a smart sailing-ship in the present day, during a summer "meltem" or a norther of winter, blowing from the mountains of Crete (including Mount Ida itself), and with all its consequent squally or typhonic character, could fetch Phœnice without tacking five or six times at least; many vessels would require three times as many tacks; and some would never reach it at all while such a wind lasted, but would be driven to leeward of Clauda, after vainly contending with the heavy squalls in crossing Messara Bay, as St. Paul's ship was, through being unable to beat up against the gale (to "face the gale," in fact, *not* "*bear up*," *as in our version*), from its typhonic character: for Mr. Smith shows, in his excellent book on the Voyage and Shipwreck of St. Paul, that the words translated into "*could not bear up into the wind*" really mean "*to look at the wind*," that is, to face or contend against it.

But had the gale been at east north-east, there would not have been a necessity to *face it*; with easy sail and little leeway a Chinese junk would have fetched Phœnice; and even almost without any sail set she would drift towards the port.

After these observations upon my experience and my views regarding the direction of the Euroclydon, I refer the reader to the dissertation upon it, in his last edition of the 'Voyage of St. Paul,' by my friend Mr. Smith, of Jordan Hill. And the accompanying

view, completed from a sketch I made about where St. Paul's ship must have experienced the Euroclydon, will be of interest to the reader in showing the very features that were in sight of the great apostle when the fury of the storm broke upon the ship. The latter has also been represented, in order to show the form and rig of a ship of that day, and her incapability of beating against such a storm and squalls as struck her and obliged her crew to bear up under the lee of Clauda island, so as to secure her from the effects of its fury by undergirding, and to save the boat which she was then towing astern, and which, St. Luke says, was a task of no little difficulty: "we had much work to come by the boat."

As the "meltem" lasted three whole days with unabated fury after anchoring at Eremopoli Bay, I was not able to search for Metallum, the western arsenal of Gortyna, until it had subsided. This spot was then easily found, at a small cove which indents the white cliffy coast between Cape Littinos and the low sandy shore of the Messara Bay. It is situated at about $4\frac{1}{2}$ miles north of the cape. The cove had, however, no mole to seaward, and lies open to the west and north-west; so that the ships of Gortyna must necessarily have been hauled ashore upon the sandy beach at its head when trading, or laid up in winter, in the same manner that the local traders now are obliged to be.

The cove being too small for my ship to anchor

J. Schranz del from a sketch by T.A.B.S
M^lda Paximadi.

C. Lithinos & M. Kophino. Lamartlith.

ST. PAUL'S SHIP CAUGHT IN THE EUROCLYDON.

within it, we brought up near it, and I then pulled up it, and landed from my boat at its head, having found, as we proceeded, that its sides were studded with ancient tombs, excavated in the rock and cliffs.

On the south side, upon an eminence above them are vestiges of a small walled fortress, built with mortar and small stones, and thus indicative of a Roman date. And in the little plain at the head of the cove we saw some few marble fragments and columns, with some massive foundations of more substantial buildings of the same time and style, and which were probably the ancient granaries or store-houses of the merchants of Gortyna, or for its war-galleys.

But the most interesting remains here, although plainly cut, are the groups of rock tombs which line the cliffs, in the valley within as well as in the sides of the cove. I counted upwards of a hundred of them, of various sizes and forms, cut in the face of the white calcareous sandstone cliffs of Metallum, from 5 to 15, and some even 20 feet square. Some also are arched, and contain recesses and niches for votive offerings; but none have any inscriptions. Many of the tombs are still in a good state of preservation, whilst others, where the stone was more soft, are half wasted away by the sea-spray and weather; and there are some few on the shores of the cove that are in part submerged below the present sea-level, thus showing, as at Cape

Sidero, Hierapytna, and Spina Longa, as I have before pointed out, that there has been an evident subsidence of the whole of the eastern half of the island, in late times, in contrast to a still more interesting movement, of apparently greater amount, which has occurred throughout the western half of Crete at the same time: but this latter movement is an elevation instead of a depression, amounting to as much as twenty-five feet, as I shall hereafter show. The actual amounts of depressions, however, cannot be so well ascertained as those of elevations; but the depression here was probably fully half as much as the elevation at the places above mentioned, and perhaps more.

At one large tomb within the valley at the head of the cove there seems to have arisen a church at a very early period of the Christian era. Although the place now used as a chapel is limited to the dimensions of the tomb by a wall of loose stones before it, the several fragments and foundations immediately adjoining show that there must have been a much larger church there in the Byzantine time or middle ages, having the columns and capitals peculiar to the ecclesiastical architecture of those times, and yet carved out of fragments from more ancient buildings. It is dedicated to the Panagia.

This is all that now remains, deserving notice, of the Gortynian western seaport, excepting the name, which is still preserved in the modern Matala, or Metalla,

for Metallum. It was first described by Dr. Pococke in the beginning of the last century, and appears not to have been visited since by any modern traveller.

Phæstus, shown by its coins to have been a town of considerable antiquity and importance, and founded by Minos, was said to have been in the vicinity of Metallum, and, according to Strabo, only twenty stadia from the sea. It was the most important city of the south coast of Crete before Gortyna became the capital; but having been early destroyed by the Gortynians, it no longer existed in the days of Strabo, and I was unable to discover or hear of its site on the present occasion. But in a journey very recently made from Fair Havens, especially to search for it and to revisit Gortyna, I came upon an ancient site at a place called Agia Fotia, situated between the village of Debaki and Metropoli or Agious Deka, and agreeing with the distances given by Strabo. I thus found that Phæstus had occupied the extremity of a ridge that divides the maritime plain of Debaki from the plain of the Messara, so as to command the narrow valley of communication between this maritime plain and the inland territory of the Messara, belonging to the Gortynians, and through which the Lethæus flows to the sea.

The river consequently passes close under the north extremity of the ridge, where it rises into an elevated and precipitous termination, and where there are ves-

tiges still of an acropolis, or its enclosing walls, upon the narrow crest, although Strabo records that the town was destroyed. The acropolis-hill is locally called Kastri—an additional indication of the fact of its having been crowned by a fortress or acropolis. Independently of these remains, vestiges of the old city can also be traced in the plain beneath, to the south, in the many fragments of pottery and stones that bestrew the surface of the fields that are now cultivated on the old site, and as far south as the chapel of Agios Joannis, which is nearly a mile from the Kastri hill, thus showing the original extent and importance of this early city of Crete. The miserable and befevered village of Fotia, containing about a dozen houses, stands in about the middle of the site, between the acropolis and the chapel; and it derives its proverbial insalubrity from the stagnation of the Lethæus in a marsh in front of it to the east, just before its escape through the contracted valley passing beneath the acropolis of Phæstus and communicating with the maritime plain of Debaki.

Just above the village, upon a commanding natural plateau, there is an ancient platform that seems to have supported a temple; and near the above church of Agios Joannis are scattered columns and many squared blocks that probably belonged to another. Phæstus had a temple to Latona and another to Venus, which have been noticed by some early authors (Class. Ant

No. VII.); and these two places are probably the sites of those two temples.

The rare but fine coins of this early and important city generally represent Hercules strangling the Hydra, or with a serpent in a tree, with one or two butting bulls on the reverse, and the name of the city. Another, still more rare, represents a naked winged youth with a ball or stone in each hand, and the legend ΤΑΛΩΣ, with a butting bull also on the reverse, and with the name ΦΑΙΣΤΙΩΝ.

This Talos, Colonel Leake shows to be a fabulous youth of the early mythology of Crete, who defended the Cretan shore against invaders, by throwing stones. (Num. Hell., Supp.)

The prosperity and fine situation of Phæstus so near the Libyan shore, naturally excited the jealousy of the proximate and rival republic of Gortyna, and thus led to its total destruction as well as conquest by the latter; but its vestiges show even now that it was once a well-built and very extensive city, and it must have been for some time the chief republic city of this part of Crete.

Phæstus was the birthplace of Crete's early sage and poet Epimenides, quoted by St. Paul in his Epistle to Titus, whom he appointed Bishop of Crete.

CHAPTER III.

GORTYNA THE CAPITAL OF CRETE AFTER GNOSSUS—THE REASON IT BECAME SO—ITS SITUATION AND DESCRIPTION—ITS ANCIENT THEATRE — SCULPTURED FRAGMENTS OF EUROPA AND THE BULL — RUINS OF THE ANCIENT CATHEDRAL OF ST. TITUS — ANCIENT BUILDINGS OF THE ROMAN CITY—AMPHITHEATRE—VILLAGE OF AGIOUS DEKA—ITS CHURCH TO THE "TEN MARTYRS OF GORTYNA"—CAPTAIN ELEA THE HOSPITABLE DEMARKH AND REVOLUTIONARY CHIEF—HANNIBAL'S TRICK UPON THE GORTYNIANS — BISHOP TITUS — ST. PAUL'S REPROOF OF THE CRETANS—CELEBRATED PLANE-TREE ON THE LETHÆUS.

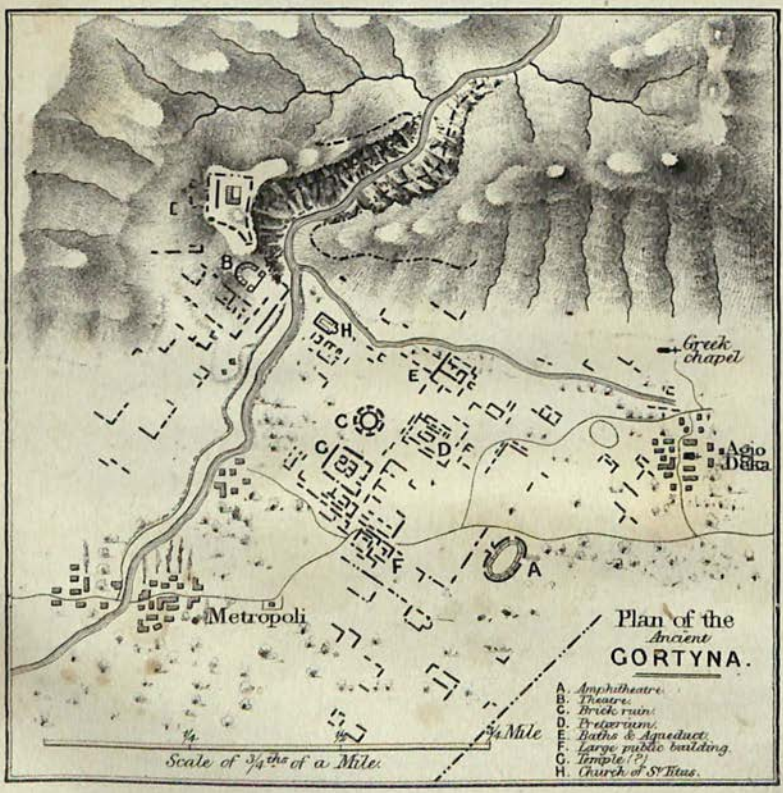
GORTYS or Gortyna, after the decline of Gnossus, with which it was in frequent hostility, was one of the most important republics and cities of Crete, and finally became the capital, although situated upon the opposite side of the island, and although possessing no well-sheltered port there. And the two principal reasons why it supplanted Minos's chosen capital, Gnossus, at once strike the mind on visiting it and viewing the magnificent plain and valley of the Messara lying before it, and from the consideration of its proximity to Alexandria and Cyrene, since the former became, under the Ptolemies, the great emporium of the East, and the latter was connected with Crete by Rome under a proconsul. Homer mentions it as a fortified place—which indicates that it was then confined

to the acropolis-hill, instead of spreading out over the plain as in later times.

Ptolemy Philopater commenced to enclose it with walls, but left them incomplete (although they were said to be fifty stadia in circuit); and it appears they ever after remained so. The time of its greatest prosperity and importance is apparent immediately the ruins of the city are reached, both from their situation and their character. For the rude and massive in material, and the grand in respect to the situation of the better part of the city, are wanting; but, instead of them, there are the fallen heaps that once formed buildings of costly elegance and luxury, and indicate Gortyna's most prosperous period to have been in the days of Rome's greatest wealth, extravagance, and effeminacy, the beginning of her decline.

Gortyna stood chiefly upon a plain extending from the foot of a steep hill bordering the north side of this great valley, just where the ridges are intersected by a narrow tortuous ravine or gorge that gives outlet to the famed and fabled Lethe, a mere tributary, however, of the main torrent-bed and stream that runs through the plain of Gortyna.

This streamlet divided the city, having the principal (that is, the Roman and more elegant) part on the level plain to the east, and the acropolis and the older and meaner part to the west—where, however, at the mouth of the gorge, and at the foot of the acropolis,


Greek chapel
Agio Deka
Metropoli
Plan of the Ancient GORTYNA.
A. Amphitheatre.
B. Theatre.
C. Brick ruins.
D. Prætorium.
E. Baths & Aqueduct.
F. Large public building.
G. Temple (?)
H. Church of St Titus.
¼ Mile
Scale of ¾ths of a Mile.

was the large theatre, the hill being in part hollowed out for the support of the back seats. The plan of Gortyna, and the view of the Cathedral of Titus with the theatre attached to it, which are here given, will enable the reader to form an idea of the nature and extent of the city, as well as the position of the ruins of most interest, so far as I could identify them. But I must here observe that when the plan was made by me I was not aware of Mr. Falkener's pamphlet, containing Onorio Belli's plans of the Cretan theatres as existing in his time. This I much regret, as in the extract given by him from Onorio Belli's MSS. is the description of a second, smaller theatre, of the existence of which I had no idea.

The large theatre is still distinct in its form, although only the internal portion of its masonry remains, which is a mere mass of rubble, of small stones and mortar—not a single seat or squared block to be seen in the cavea, nothing but a single course of quadrangular blocks running toward the middle height of the curve. Measured roughly, I made it to be about 280 feet; in Belli's plan it is rather more; but an accurate measurement cannot now be easily made without excavation.

The foundations of the scene had been, in part, laid open, and found to be composed of large, closely fitted blocks of grey limestone, during some excavations that were made by the orders of Velli Pasha, a few years

ago, when there were found three fragments of a sculptured bull, nearly the life-size of a Cretan bull, and most spiritedly designed, and with them the torso of a sitting female figure. The animal is apparently in the attitude of rearing, and has a part of a human hand still upon its shoulder, which led to the opinion by better judges than myself (an opinion which, since the fragments have been set up, has proved correct) that it was a group representing Europa upon the Bull, which characterizes some of the coins of Gortyna. I have pleasure in being able to state that this interesting relic, illustrative of a local fable of very early times, is now in the British Museum. Although it is by some supposed to have never been finished by the original sculptor, yet I am inclined to the opinion that it was at first finished but afterwards partly destroyed, the unfinished parts being an attempted or intended restoration of a later time, when it was set up by the Romans within their theatre; for the finished parts of the group are well executed, and are very spirited and life-like, although the style of art is characteristic: moreover the bull is a close representation of the peculiar form seen upon the coins of Gortyna representing the same subject. There still lie, upon the spot whence these relics came, some fragments of a spirally fluted column in grey marble, and a perfect composite capital in Parian marble, both indicative of a late restoration of this part of the theatre; and in

front of it is a broad vaulted platform, with the piers of a fallen bridge that was in connexion with it and led over the narrow but deep water-course of the Lethæus, which ran close by.

The wall of the acropolis began its ascent from the back of the theatre (as will be seen in the view above the plan of the ruins), and enclosed the top of a steep-sided hill directly above it, the summit of which was not more than 170 yards square. The wall was flanked with semicircular towers, and built of small stones and mortar. Nearly half of the area thus enclosed is occupied by a Roman building that contains a long open court partly sunk into the hill; but as an arched roof was carried over the whole or a part of this long sunken area, it appears to have been a great hall or common vaulted cell in which prisoners were confined. On the outside of its west wall are twelve vaulted compartments, none of which communicated with each other or with the interior; they may have been cells for state prisoners or for the soldiery guarding those in the interior: it is dangerous, however, to hazard opinions upon the use of buildings of which so little remains. The other ancient vestiges on this side of the river do not appear worthy of notice.

The best preserved as well as one of the most interesting of all the ruins now seen at Gortyna is that of a plain but well-built and very early church, dedicated, according to Belli, to St. Titus, which stands

opposite to the theatre, on the east side of the river; it is in the form of a cross, and constructed of closely fitted squared blocks, instead of Roman brick, rubble, and mortar like the rest. The eastern end of the church is almost entire, except the vaulted roof and part of the southern sacristy or chapel, forming the south arm of the cross, which have fallen in. The northern sacristy is almost entire; and in it there is a Greek chapel, now generally used by the Greeks of Metropoli. (See view.)

Over the centre window at the east end of the church there is a large squared block, with an illegible inscription down its two sides and along its lower edge, thus forming three lines, the two side ones having been read vertically instead of horizontally. It was seen by both Tournefort and Pococke. The former thought he made out the name of one of the early Bishops of Gortyna; but, from what is now readable of those letters by the aid of a telescope, this does not seem well founded.

In front of the church is a large marble pedestal and a slender column standing erect near it. The pedestal doubtless was that of a monument in honour of some emperor or magistrate, or to commemorate some event; for it could not have been connected with the church, but with the approach to the theatre on the opposite side of the Lethe, before the church was built, as it stood by the wayside, and the ancient bridge

across the Lethe, leading to the theatre, was in front of the church.

To the eastward, amidst the gardens and cultivated fields of the inhabitants of the two villages of Metropoli and Agious Deka, which now occupy the site of Gortyna, are numerous masses of unrecognizable ruins, some level with the soil, others standing some feet high. Amongst them are aqueducts that were connected with those running along the sides of the gorge; and the eastern one of the latter now conveys a fine stream which turns a water-mill, and from which the fields are irrigated and the inhabitants of Agious Deka supplied for their domestic uses; but it originally ran closer to the foot of the mountain above it.

In the open cultivation between the river and Agious Deka there stands a small circular ruin, built of small stones and brick, of about 93 feet internal diameter, and surrounded externally by a double tier of arches or vaults opening outwards and forming long and narrow compartments, making the whole diameter of this brick ruin about 145 feet. Pococke gives the details more minutely, and says that it had niches all round on the inside, 4 feet 10 inches wide, and apartments on the outside, 5 feet wide and 17 feet long, which corresponded with those on the inside, and thinks it was a temple; but it has fallen down externally and become filled internally since

his time, so as to render its original purpose still less determinable; yet I cannot imagine it to have been a theatre or an amphitheatre.

At 50 or 60 yards to the eastward of it is the site of the prætorium or judgment-hall,—all that now remains erect being a mass of wall standing upon a quadrangular basement or platform, with some fragments of columns, ornamented pedestals, and squared blocks lying upon it; besides these are seven pedestals, which formed part of a colonnade that surrounded it, and supported columns and statues: these are still *in situ* on the west side, but only just appear above the surface of the soil from its recent accumulation around them. In Pococke's time there were eight of these pedestals visible, with their columns standing. Two of these columns, inscribed, are now lying near; and one of them contains the inscription No. 1 in Falkener's 'Antiquities of Candia, from Venetian Manuscripts,' of which he has given ten that existed in the time of the Venetians. The other remaining inscription is almost illegible; but the first words of it evidently show that it is one of those given by Belli.

This must have been a fine building, but yet insignificant in comparison with many of those which ornamented the cities of Lycia and Pamphilia at the same time. To the south-east of it is a large public building or temple that was enclosed within a court,

the entrance to which was on the east side, near the present road, where two granite columns are now lying in the place where they stood.

An irregular mass of wall of some large building is seen to the south-east of this also; and between these the modern road through the ruins passes. Some early Greek churches, too, can be made out, besides which there are some portions of the Roman wall of Ptolemy, more in the centre of the plain. The amphitheatre is still recognizable by its form: I made it to be nearly 300 feet in long diameter; but it is not easy to measure it. The area within is hardly to be distinguished, nor are the vaults or arches upon which it was supported very evident, except two or three, all being a heap of rubbish and brushwood, forming one of the most conspicuous mounds in the place.

I regret that I am unable to give any account of either the small theatre or stadion which Belli mentions as being so beautiful although it was a plain building of soft stone, nor of the thermæ, although that must have been somewhere near the amphitheatre.

Agious Deka, or the "Holy Ten," is a miserable village of about twenty-five houses surrounding the church dedicated to the "Ten Martyrs of Gortyna" (who were beheaded here, during the reign of Decius), which is situated at the eastern end of the site. Here lives Captain Elea, an old chief of the revolu-

tionary struggle for independence, and now the hospitable demarkh, to whom every traveller to Gortyna is recommended, on account of his proverbial hospitality to the stranger; and his noble character quickly manifests itself and impresses his visitor and guest.

His house is close to where the old church was raised upon the site of the martyrdom of the Holy Ten; but that having been destroyed in the revolution, a new one has been very recently built within the façade of the old Byzantine building. The new church is a simply whitewashed and undecorated building of about half the diameter of the former; but it has a few pictures of saints, and a representation of the beheading of the Holy Ten, whose blood was here shed for their constancy to that faith which was doubtless planted in the locality by St. Paul whilst a prisoner at Fair Havens, previously to his disastrous voyage and shipwreck; and a rude block of marble, having nine or ten irregular-shaped pits in its surface, each of the size of a small tea-cup, is supported upon a pilaster by the side of the altar, and held very sacred, from the local tradition that it is the identical block upon which their blood was spilt when they were beheaded.

These holes or depressions are no doubt the result of friction from the fingers of innumerable devotees, who have daily touched and kissed the relic, out of special reverence for the martyred ten.

A large tree grows in front of the church, almost

hiding it; and several fragments of ancient buildings, beautiful and of public importance in the days of Gortyna, are scattered over the village or built in its walls, amongst which was one with the inscription No. 3, Plate II., referring to Ptolemais in the Cyrenaica and also to Gortyna: this I copied on a former visit to Agious Deka, and now find that the stone has been subsequently removed to France by a French traveller. Moreover a sarcophagus of blue limestone, but only half finished in its ornament of bulls' and rams' heads and festoons of flowers and wreaths, is the trough of a fountain near.

Notwithstanding the pressing invitation of Captain Elea, instead of occupying the upper room of his two-storied habitation, amongst his wife's stock of silk-worms and cocoons, I pitch my tent in a garden near. His kind hospitality, however, soon provides me with a supply of milk and a porridge of new wheat and sour curds, which is called Xinó Varí (heavy acid—a name truly characteristic of its nature), which in politeness I am obliged to take and pronounce excellent, but must eat of sparingly, as its very name would indicate. No doubt, in early times, as now, this was a Cretan dish, though one which only Spartan palates could relish or Spartan stomachs digest.

Spero tries to get a fowl, but he is told there are none to be had in the village; and the reason assigned was, that "they were all eaten up last year by our

compatriots from the mountains." "For after they had eaten up all that the Turks left behind when forced to retire into the fortified towns," said one of the villagers (a Sfakiot, too, who had married and settled here), "all ours were killed and eaten afterwards, as our friends and compatriots could not starve." And when they have thus impoverished the lowlander by consuming his stock and crop, the noble upland patriots retire to their mountains again, the Sfakians leading the way.

The Israelite, therefore, as well as the Egyptian, had been in part spoiled in this patriotic movement, which was mainly intended to prevent improvements that were contemplated by an enlightened governor, although he was a Cretan by birth, and his mother a Cretan Greek.

But the mountain chiefs or the Sfakian troops are not solely answerable for this, as there were instigators, without as well as within the island, who to promote their own personal interest and policy excited and urged on the baneful *émeute* amongst a high-spirited people, too easily stirred up by false hopes and misrepresentations.

The associations connected with Gortyna's past conditions and history have always possessed some interest, whether in respect to the heroic, Roman, or early Christian period. The loves of Jupiter and Europa in early Cretan story, his transformation into a

bull and an eagle, her flight upon the back of the bull, and the evergreen plane-tree on the banks of the Lethe, in connexion with the story, are familiar traditions and myths, all of which are illustrated with high art on the earlier coins of Gortyna, the finest of the Cretan medals.

Then Hannibal, the general of all generals in all time, was here a refugee after his defeat by Scipio. It was upon the Gortynians that he practised the artifice of sending vases filled with lead for security to the temple, whilst some brazen images retained in his house as his household gods were filled with the gold the vases were supposed to contain, which thus escaped their known cupidity. And thus he saved his gold by doing what Perseus of Macedon once desired to do—that is, "practising upon the Cretans the Cretan art of deception." (See Plutarch.)

But St. Paul's proximity to, if not actual presence at Gortyna, when he was a prisoner at Fair Havens, gives it a far deeper interest, it being situated only just on the other side of those hills which overlook the haven and separate it from the plain in which the city stood. And here doubtless, as the capital of Crete at the first dawn of Christianity, Titus was left as St. Paul's specially appointed Bishop of Crete:—

"To Titus, mine own son after the common faith, grace, mercy, and peace from God the Father and

the Lord Jesus Christ our Saviour. For this cause left I thee in Crete, that thou shouldest set in order the things that are wanting, and ordain elders in every city, as I had appointed thee," &c. (Titus, i. 5, 6.)

And here no doubt the ten martyrs who, in the time of Decius, were sacrificed for that faith which the great apostle had planted in the locality, often and often spoke aloud to the Gortynians that verse which St. Paul quotes from their own sage and poet Epimenides of Phæstus:—"One of themselves, even a prophet of their own, said, The Cretans are always liars, evil beasts, slow bellies." (verse 12.)

Doubtless this was often repeated and shouted by Titus and the Holy Ten into the ears of the Cretans in the first efforts to reform them to Christianity. For St. Paul adds, "This witness is true; therefore rebuke them sharply." (verse 13.)

And there seems to have been a community that responded to it as being true; for there is, strangely, if not appropriately, a village directly opposite to Gortyna called Truth or The Truthful—Alethia or Alethiani being its name, which thus is echoed from the very hills that faced the city.

Pliny and others mentioned the existence of an extraordinary evergreen plane-tree that grew on the banks of the Lethæus, so evidently on good authority that the fact of its existence could hardly be doubted. The old botanist Tournefort diligently searched for it,

but without success, the inhabitants having retained no tradition of the tree; and yet they really possess it still. Its existence was made known to me accidentally in the following manner. The late Mr. Agnew, an English merchant at Alexandria, having married a Cretan slave there, retired to her native island with a handsome fortune, and laid much of it out in behalf of the poor relatives of his young wife (but, through their ingratitude, to his regret afterwards), besides purchasing considerable estates in the district of Khania for his own amusement. One of these properties was at the village of Lutraki, in a valley nine or ten miles from the town of Khania. Here we were taking a walk together, when he said, "Now I will show you a curious plane-tree that never loses its leaves," and taking me to a steep part of the valley, to the north of his house, he pointed out two rather young and branching plane-trees that grew from the side of the rivulet flowing in the ravine; they were surrounded by many others, but these two alone retain their leaves during winter.

The spot was too far from Gortyna and all traditional associations connected with it, for the story of Gortyna having been celebrated for such a plane-tree to be remembered by either of us at the time; and he informed me that these two trees were suckers or saplings from the roots of a very large one of the same kind, which he had cut down soon after pur-

chasing the property, for some requirement, not knowing its peculiarity. He told me also that he had heard of another, from some priest, as being near a monastery in that part of the island.

This led me to make diligent search and inquiry amongst the people of the village of Agious Deka for an evergreen plane-tree there or in the Messara, but I could not find any one who had ever heard of such a tree growing in the plain; at Meres, however, a village below Gortyna, a peasant from the village of Vourvolete informed me that two were growing in a valley near it. In the two at Lutraki no difference could be perceived from those plane-trees that dropped their leaves, except, as I am informed, having an apparently thicker and less flexible leaf. Pliny says that attempts were made to propagate the evergreen species throughout the island, but that it degenerated, shedding its leaves in autumn as all other plane-trees; but the fact of its existence still at Lutraki and elsewhere, shows that, although it was generally so, this cannot have been the invariable rule. These facts, although of simple import, yet, in verification or rectification of ancient history, have a special interest in themselves to the traveller and explorer.

CHAPTER IV.

A LABYRINTH NEAR GORTYNA PROBABLY THE CELEBRATED LABYRINTH OF CRETE—INHABITED DURING THE REVOLUTION—ITS CHARACTER TRULY LABYRINTHIC—NOT AN ANCIENT CATACOMBS—CONJECTURED MOTIVE OF ITS CONSTRUCTION AND USE—ORIGINALLY A QUARRY—PROBABLY A PRISON FOR THE TRIBUTARY YOUTHS OF ATHENS—TOURNEFORT'S THEORY, AFTER VISITING IT, REGARDING THE GROWTH OF ROCKS.

THE neighbourhood of Gortyna has become celebrated in modern times for a mountain-labyrinth which exists in a valley near it; and some have inferred that this was the celebrated labyrinth of Crete, the abode of the fabled Minotaur, and the work of Dædalus.

That a labyrinth existed somewhere in Crete seems certain, but history does not clearly establish where. Herodotus is silent upon its locality; and Strabo, who says he well knew Gnossus, does not place it there, nor even enter upon its description—merely alludes to it. It is Diodorus alone who speaks authoritatively on the character and place of the labyrinth, and states that it was at Gnossus; the coins of Gnossus, too, early and late, all bear the symbol of the labyrinth. And the explanation may be this, that as a work of art, wherever situated, it was a true labyrinth, therefore a marvel to the ignorant of the time, and a natural

source of fable for the credulous and superstitious afterwards.

It was made by Dædalus, in the time of Minos, doubtless by direction of Minos himself; and whether in the bowels of Mount Ida or at Gnossus, no doubt so wise a king had it constructed originally for a useful purpose: for in seriously taking up a discussion of the history and origin of such a work, we must leave the fables associated with it to the poets that invented or cherished them, and view it rationally as a fact, and of some utility.

Although Gnossus was no longer the capital of a kingdom after the Trojan war, it was still acknowledged as the chief or most influential of the community of republics into which Crete was then divided. When, therefore, coins were first struck, in the time of those republics (for there were none before), in adopting a significant symbol for each community, it was natural that the chief republic and former capital should adopt as its legend the great work that was the marvel of the great king's time, and the representation of which would be worthy to be combined with the effigy of that king (or of Jupiter, of whom he was said to have been a son) on the coins of the principal republic of Crete; and we find that it was adopted on all Gnossian coins of that time and subsequently down even to the Roman conquest. As a mere symbol, therefore, of a great work of Minos,

and not as an indication of its actual existence at Gnossus, no specific form was necessary; and so it is represented upon the various coins in many different forms.

Hence it is, perhaps, an error to accept the statement of the credulous Sicilian historian as authority, or to reason that, because the coins of Gnossus alone bear its image, the labyrinth must have been in that city.

Now in the mountains behind Gortyna there is unquestionably a real labyrinth, such as the ancients understood by that term. I have explored it as far as it is now open, and under good native guides spent nearly two hours in threading its tortuous passages and chambers, which turn in so many ways, and have so many branches, that, it would seem, a master-hand must have directed the excavation, to prevent, *without a compass*, their running into each other more than they at present do, which would have somewhat endangered its falling in from want of support, or defeated the labyrinthic object of its approaching sinuosities; and that it had some such an object, as well as being a quarry, struck me very forcibly after having entered and explored it. The mark of the tool, too, is seen upon every side of the passages and chambers, indicative of its artificial character. Its course, also, is nearly, but not quite, horizontal, so as to follow the same stratum of rock

from the entrance, a white calcareous tertiary limestone, which some would call a freestone, and which was both excellent for use as building-material and of easy excavation—somewhat like that of Malta or our Bath stone, and evidently the same that was so much used in some of the buildings of Gortyna and Phæstus.

Now the entire extent of this subterranean quarry or labyrinth is not known; for its innermost recesses have long been closed by intentional walling up, or the falling in of the roof of several of the inner passages; but the native tradition is, that it extends as far again as the part now open and practicable, and probably further; and, as far as it is now open, to my surprise my guides were perfectly familiar with every turning and with all the chambers, of all shapes and sizes, into which the passages finally led.

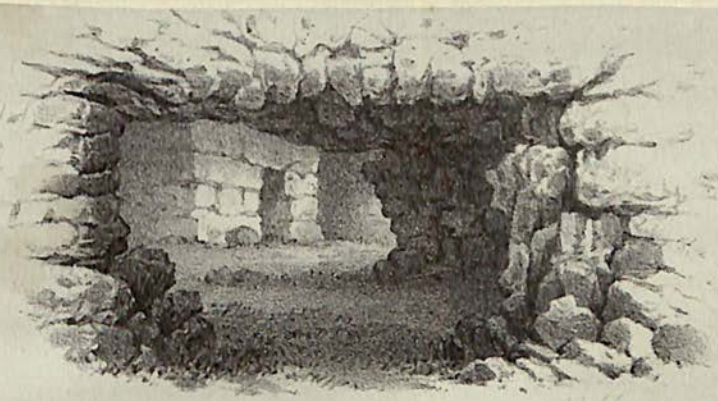
Bats are its only inhabitants at present, and were found most numerous in the innermost chamber, hanging from its ceiling like a pendent inverted pyramid or a cluster of bees, by their mode of hooking on to each other; and beneath them was a mound of their guano that almost reached the apex of the pyramid of living creatures. The fact of their presence and numbers is mentioned as a caution to the explorer to be careful of his naked lights and lucifer matches, so that he may not be left in the dark by the Bats (who will be disturbed by his

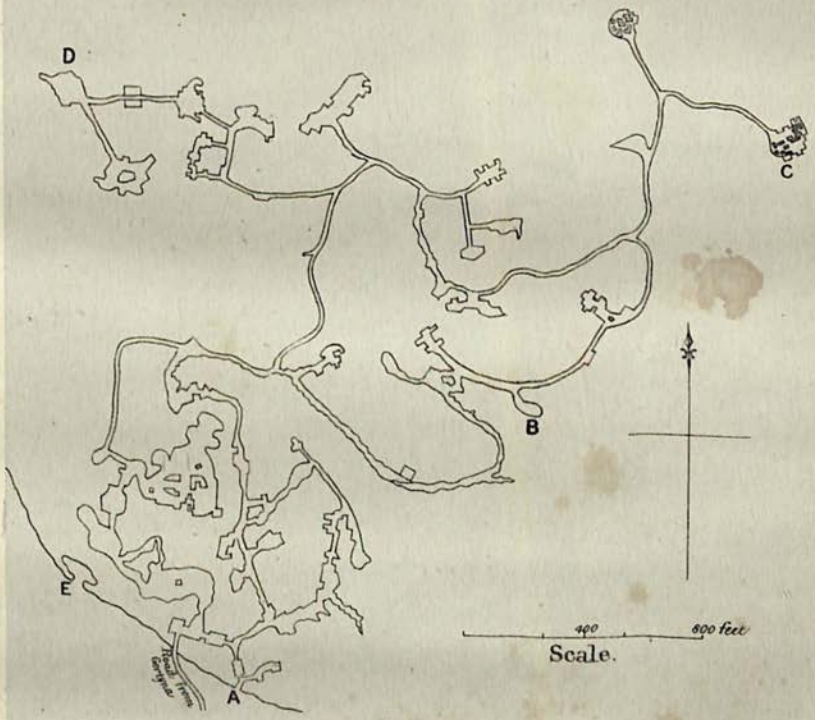
presence) flying at and extinguishing the light he is carrying.

But during the long Revolution of 1822 to 1828 the Christian inhabitants of the adjacent villages, for months together, lived in this labyrinth for security, merely sallying out by day to till their lands or to gather their crops when it was safe to do so, which accounted for the familiarity of our guides with its intricacies. The sides of the widest passages near the entrance (which, however, were seldom more than 12 or 14 feet broad, and from 7 to 8 feet high) had, in consequence, narrow compartments, formed of walls of loose stones, reaching to about half the height of the passage, that is, about 4 feet. These served as their several abodes and sleeping-places; and during the first quarter of an hour after we had entered, the older guides were occasionally pointing out those which had been used by themselves or their friends, as we passed along and they recognized them, calling them the speti (house) of a Demetri or Joannaki; but, although dry, they were not very inviting abodes for human beings for a lengthened period. Still, as the inmates felt themselves safe from their enemies without, the sense of security gave doubtless an enchantment to the spot, not comprehensible to us; and on coming to what appeared to be a rather large vaulted natural cavern, where there was a small drip of water from the roof, and the only spring in the labyrinth,

they pointed it out to us with evident pleasure and pride, as it doubtless awakened the recollection of many hours of mirth, it having been, as they said, the place in which they used to dance on festive occasions —their ball-room in the bowels of Ida! Doubtless there were Ariadnes and Theseuses there in modern times, as in the ancient labyrinth. All this created a homely feeling which few but themselves can fully comprehend, in regard to the dark but secure abode: for it could not be approached within range of the numerous muskets that pointed from masked loopholes at its entrance, without bringing the bold man who dared it immediately to the dust; and no strategy like the horrible one of the Melidoni Cave, so fully recorded in Pashley, could, by fire or smoke, suffocate or dislodge them here, as the entrance was in the side of a steep hill, 500 or 600 feet above the bed of the wild valley in which it is situated, and thus was safe from attack in every direction. A sketch of the entrance accompanies the plan published by Lieber, which occupied him three days in making, and of which I here give a copy.

Now history, as well as tradition, states that, in all troubled times in Crete, the labyrinth of Gortyna has been the retreat of the inhabitants of the neighbourhood; it is therefore the more probable that Minos had such a contingency in his mind when he had the labyrinth made. But much confusion from time to





Plan of the Labyrinth of Gortyna.

A. B. *Entrances to the quarry, now filled up.*
C. *The corridor here is obstructed by blocks of stone and chips: an entrance must have existed in the vicinity.*
D. *A communication with the exterior must have existed here.*
E. *A small excavation by the side of principal entrance.*

time has existed amongst authors regarding the Cretan labyrinth, some confounding it with a far more celebrated one that was in Egypt and was known to be partly built above ground and partly subterranean, and supposing the Cretan one to have been built like it—a supposition, however, for which there does not appear to be any authority.

In the 'Classical Antiquities' of Dr. Smith, there is this important passage upon the Labyrinth:—

"The word appears of Greek origin, and not of Egyptian, as has generally been supposed. Accordingly, the proper definition of labyrinth is a large and complicated subterranean cavern, with numerous and intricate passages similar to those of a mine."

No words could better describe the character of the labyrinth of Gortyna, or the impressions conveyed to the explorer from its resemblance to the galleries of a mine or catacombs, although it was certainly not used or built for sepulture, having no niches, recesses, or benches (such as are found in all ancient catacombs) for the repose of the bodies: hence I am compelled to differ with the late Colonel Leake in regard to the origin of this labyrinth, he, as well as many others, having regarded it purely as catacombs; for my minute exploration of its passages left no such impression, but the contrary, upon my mind.

Now there is a point not generally noticed in the construction of such a labyrinth, viz. that it could

only be excavated, so as to remain of use either as a treasury, catacombs, a quarry, or a place of refuge (independently of the material desired to be extracted from it), in certain places where the strata were almost perfectly horizontal, and the rock sufficiently compact to admit of the excavation being carried into the heart of the mountain without falling in, or being stopped by the infiltration of water through the sides or from above.

At the catacombs which are shown near the site of Gnossus, I saw no place where the making of a labyrinth of such extent could be effected with such apparent facility, or was so favoured by the quality of the material, as the one in the southern roots of Ida, behind Gortyna, a locality which the skill of the great Dædalus, as an architect and sculptor, alone could best point out at that time, as every practised architect or civil engineer of the present day will comprehend: for, from the variety of works that are attributed to him both in Crete and Sicily and elsewhere, he would seem to have combined the qualifications of a civil engineer and architect of the present day with the talents of a sculptor.

This matter-of-fact view suggests a rational explanation of the story of the seven youths and virgins sent annually as tribute to Minos by the Athenians, from their best families. For Minos was said to have been the founder of several cities in Crete, especially

the neighbouring city of Phæstus; and as the founding of a city in those days meant the enclosing it within walls for security, as well as peopling it, he perhaps set Dædalus to build those cities; the ingenuity of the latter might have suggested that the place whence the material was quarried might be converted into a prison, a treasury, or a refuge; and in effecting this the labyrinthic character of the excavation was carried to perfection.

Now what was more natural than that the foresight of Minos should desire, to people the chief cities of the island, or those he himself founded, with some of the best blood of a noble race, such as the Athenian, after having them educated under his own wise laws, which afterwards became the model for Lycurgus? And may not this labyrinth then have been the temporary abode of the tributary youths of Attica's choicest blood, that they might be trained there, to intimidate them into obedience, and to blunt the recollection of their own country and customs by the contrast they would experience on being set free in those cities? for most fables and proverbs arise from some early fact or phenomenon. And hence perhaps we may see the reason why Minos chose the youths of aristocratic blood (of whom Theseus was one), and not the silver of their Laurian mines, for his tribute from the Athenians. And then how easy, and how natural, in the age of such myths, the creation of

the story that the tributary youths from Athens, on being sent to the labyrinth, became food for a Minotaur or monster, particularly in the minds of their relatives, who saw them no more, and who only heard of their being embowelled in the labyrinth! The popular credulity of the present day in some countries is not far from that in the days of Minos, and is as easily led to a belief in the marvellous almost as absurd. What are the traditions of Russia in respect to the Siberian mines? Not far removed, probably, from the tale of the Minotaur, considering the difference of time and of religion. In the 19th century of that religion, men spend a lifetime in those mines, which are far more infernally dreadful, as abodes for humankind, than the dry quarry and labyrinth of Gortyna ever could be.

These crude ideas upon the identity and origin of the Cretan labyrinth need an apology; but though the question has been so often debated, scarcely ever has it been discussed in a practical point of view and devoid of the fable and myth that have been entwined with it. And such a labyrinth as this quarry really is, might well be represented under all the fantastic forms we find it to be on the coins of Gnossus, for which it was chosen as the appropriate symbol of the chief city of Crete.

Sieber's plan of the Cretan labyrinth (published in Walpole and elsewhere, and given above, p. 49) makes

it, as far as he penetrated, to be exactly half a mile in a direct line from the entrance; but by its sinuosities, even if following the most direct passage to the inner chamber, the distance would be about a mile: but it really extends much further; and Mr. Cockerel, who has minutely described it, even thought that this was only a small part of its probable extent. And as it has two openings, although they are close together, and several of the passages actually run into each other, good ventilation was obtained thereby, and some of the communications seem to have been left only just wide enough for this; and therefore as the modern Cretans have lived in this labyrinth when necessity drove them there for refuge, and enjoyed, too, their homely rural pastimes within it on festal occasions, the Athenian youths could have lived there also, but with much more comfort, under the care of the king, until the time came for their removal to the cities for which they were destined as teachers of his laws or rulers of his rabble.

In thus endeavouring to solve a myth of a date so old as 3000 years, I am reminded of the simplicity of the quaint old traveller Tournefort, who went into the labyrinth a professed botanist, but returned from it a profound petrologist also, having become convinced that stones, like plants, vegetate and grow—a notion which he conceived from seeing an efflorescence of some crystals of salts that had filled up certain inscriptions

which had been made upon its walls some years previously, to record the visit of some knight of the sword in the time of the Venetians, or of travellers desirous of notoriety, by giving their name and rank, or by inscribing such records of themselves as this:—"Madame C., enceinte trois mois!" &c., in true oriental taste and pride.

I must here quote what the learned traveller and botanist says in reference to some of them and to the growth of rock:—"In the grand walk there are also great numbers of ciphers and other marks, and amongst the rest that which is in the margin, which seems to be put by some Jesuit. We observed the following dates, 1495, 1560, 1579, 1699. We, too, wrote the year of the Lord 1700 in three different places with a black stone. Among these writings there are some really wonderful. This corroborates the system proposed by me some years ago, concerning the *vegetation of stones, which in this labyrinth increase and grow sensibly, without being suspected to receive the least adventitious matter from without.* When the persons were graving their names on the walls of this place (which are of living rock), little did they imagine that the furrowings wrought by their pen-knives would be insensibly filled up, and in time adorned with a sort of embroidery, about a line high in some places and near three lines in others, so that these characters, instead of being hollow and con-

cave as they were at first, are now turned convex, and come out of the rock like basso relievo.

"The matter of them is white, though the stone they issue from is greyish. I look upon this 'basso relievo' to be a kind of callosity formed by the unctuous juice of the stone, extravasated by little and little into the above-mentioned channellings made by the graver, like as callosities are found at the extremities of the fibres of broken bones."

This singular instance of the credulity and misjudgment of the celebrated French botanist and traveller is at the same time amusing and instructive; for it shows how easily a simple but speculative mind may get profoundly out of its depth when venturing into paths of science or research foreign to its general studies. And, I fear, the scholar and antiquary will have good cause also for amusement at my simplicity, in venturing into such a labyrinth without the thread of Ariadne, or the intellectual clue with which they alone are privileged.

I therefore now take leave of its intricacies and maze, and shall endeavour to refresh my ideas by the pure air of the mountain-tops, and so return across the intervening ridges by way of Agio Thoma to the town of Candia.

CHAPTER V.

THE VILLAGE OF AGIO THOMA—ITS SITUATION—GEOLOGICAL REMARKS ON THE NEIGHBOURING DEPOSITS—ANCIENT PHYSICAL CONDITIONS AND CHANGES—TOMBS AND ANCIENT VESTIGES AT AGIO THOMA.

I HAVE mentioned Agio Thoma as the site of some Hellenic remains to the north of Arkadia.

The road from Gortyna to Candia crosses a rather high plateau on the main ridge dividing the waters flowing north towards the bay of Candia and south towards the Libyan Sea. Agio Thoma is situated near the top of this plateau, and is thus on the confines of the three provinces of Melavisi, Monofatsi, and Kenurio.

Many of the houses have been in ruins ever since the war of independence, which began in 1820 and lasted till 1829; but the conical rocky eminence that rises in the centre of the village is now surrounded with luxuriant cultivation: cherry- and apple-, mulberry- and other fruit-trees flourish; fine valoneas and oaks grow in the valleys approaching it; and the neighbourhood has recently become noted for the production of the potato, good crops being raised from the fertile soil.

The situation of Agio Thoma is about 1800 feet

above the sea, upon the upper strata of the tertiary deposits where they rise to nearly their highest altitude throughout the island. The miocene tertiary sea-level was therefore not much above 2000 feet high anywhere. The rock of Agio Thoma, as also the Arkadian crags and some other peaks in the central part of the island, are therefore knolls that just show above the soft tertiary deposits which envelope them; and it is the presence of the latter that gives such a marked character of fertility to the district south of the town of Candia and to the valley of the Messara.

All the ridges descending to the Bay of Candia and to the plain of the Messara are chiefly composed of white tertiary marls and sands, sometimes intermixed with gravels; and the strata dip at a small angle, both north and south, from the main central ridge which here (by Agio Thoma) connects Mount Ida with the Lasethe Mountains.

If Crete were again to be submerged to the same level as in the late eocene or the early miocene tertiary period, the Libyan and Ægean Seas would meet here, but with a narrow and shallow channel where the villages of Agio Thoma, Breveliana, and Vavares stand. This is shown by an admixture of fresh- and brackish-water shells in beds of gravel and clay that I observed near the latter village, overlying the white strata of the lower and older group of marine tertiary, and thus indicating a shallow brackish or

freshwater channel, or a lagoon, or perhaps a lake over the whole, at some later time.

Mount Ida and the White Mountains, with the entire western part of Crete, would form two large islands at that period, but with several islets around them, of which the promontories of Cape Spada and Cape Maleka would be two of the largest; and the eastern part of Crete would be again a little archipelago of rocks and islets, with a great gulf where the Messara plain now exists, and which would even extend over the Pediada plain to the north.

A channel would also exist across the narrow isthmus of Ierapetra, and also at the valley of Præsus more to the east, so as to divide this peninsula into two islands. The yellow colour on the map, to show the distribution of the miocene tertiary strata, will give, at a glance, an idea of the configuration of Crete at this period, when its most habitable and fertile parts were yet in preparation for the future human race.

The yellowish-white-looking marls descending from the north of Agio Thoma are all of marine origin; they belong to the bed of the old tertiary sea; and their being apparently deposited for the most part in considerable depths accounts for their containing few fossils, those few proving them to be of the same age as the Malta group and the hills and ridges bordering the north coast of Libya and Cyrene; but the deposits here are softer, and it is the fine deep soil which re-

sults from their easy disintegration that renders the Melavisi district so famed for its grapes and wines—and, according to some, for the renowned Malmsey or Malvasia, which was known and highly esteemed in the time of the Venetians, as shown in the following extract from a manuscript published by Mr. E. Falkener in his 'Museum of Classical Antiquities:'—

"But the most celebrated wine grown here is the Malvasia. It is produced from one particular grape; and if others of a different quality are mixed with it, even in small quantities, it is said to lose its taste and virtue, for which reason it is called Monovasia. The vine is small and low, and the leaves different from all others, resembling those of a plantain-tree. It flourishes only in this island; and if transplanted elsewhere, it loses its peculiar property. It bears but few grapes; but the wine is white and brilliant, and, when kept, acquires such force that at ten years old it burns like oil. It does not grow in all parts of the island, and it is produced in such small quantities that scarcely ten amphoræ a year are made. It thus becomes of great value, and the chief part is consecrated for the sick and infirm. It is never exported, the wine sent to other countries under this name being produced from the ordinary grape of the country, differing from real Malvasia in colour, taste, and smell."

But the true Malmsey, according to the late Colonel Leake, was that grown near to, and derived its name

from, Monemvasia, on the eastern coast of the Morea. (Researches in Greece, p. 197.)

The marine tertiary deposits of the same age, which incline away to the south from this main or central ridge of Agio Thoma, are more gravelly and sandy, as I have before shown when on the route to Arkadia across them; and although at parts one is rather led to suspect them to be deposits of a different age, yet, as the prevalent winds and currents of the sea of those times were probably nearly the same as now (that is, principally from the north), the leeward deposits would be necessarily the most charged with the drift and débris from the wasting islets, rocks, and coast lying to the north (that is, to windward).

If the traveller will but mount the rocky eminence above Agio Thoma, or any of the more elevated peaks near, and survey the picture spread before him, with all its varied ridges, undulations, and valleys, and contemplate the past with the present, as a geologist loves to do, he will comprehend the physical results the more easily; and then he will examine what he may afterwards meet with and see on the route to or from Candia with the greater interest, through having thus taken this comprehensive view over the whole, and associated in his mind what has been with what now is. The group of rolled pebbles of limestone and the associated dark slates of some parts, the comminuted sands from the same beds, or the impal-

pable marl, full of minute organisms and Infusoria, forming others, will each receive their explanation from the seasons, from local disturbances, or the depths in which they were deposited; and the journey over them will thus be made both the lighter and the pleasanter.

The ancient vestiges at Agio Thoma, which induced me previously to think it might be Arkadia, are some remains of a fortress on the rocky eminence above the village, a few fragments in the houses of the village, with some cisterns and tombs in the vicinity, some of which last-mentioned are cut in the rock and others in the open surface-soil near it.

The following votive inscription to Demeter and Kora?, on a tablet cut upon the face of a rock, also showed that there had been some Cretan city or temple at this locality:—

ΘΕΑΙΣΔΗΜΗΤΡΙΚΑΙΚΟ Η
ΛΑΡΚΙΑΑΡΤΕΜΕΙΣ
ΕΚΤΩΝΙΔΙΩΝ

Onorio Belli also mentions this inscription, but gives a Latin version without the original. There was also the following, in very large letters, on a rock near it, viz. ΚΥΛΙΑ. It was copied by Lieut. Wilkinson before the Crimean war, when examining the district in connexion with the coast-survey, and therefore previously to any knowledge of Belli's manuscript. It is, however, interesting to find it was noticed by the Venetian antiquary so long ago, and yet sur-

prising to find that he did not know also of the neighbouring ruins of Arkadia.

The question, therefore, now is, What ancient site does Agio Thoma represent, since I have shown that Arkadia was elsewhere?

There was a place called Thene, noticed by some authors, which sometimes suggests itself, as it is stated to have been near Gnossus; but then the Omphalian Plain, which is also said to have been near it, is wanting; and for this reason I have placed Thene at Sapa, or Saba, on the north side of the Pediada plain, recognizing that as the ancient Omphalian Plain from its size and from the insignificance of the one here. I therefore leave the question respecting Agio Thoma to be solved by the future traveller or antiquary, and take the reader back to the town of Candia, as completing my descriptive tour of the eastern half of Crete, having, together with the details shown on the map, said sufficient of the intermediate part, and in the next chapter open my journeying in and remarks upon the western half—supplementary only to Pashley, for his volumes more particularly refer to the western half of the island; and yet he has left much interesting matter undiscovered or undescribed.

CHAPTER VI.

JOURNEY IN SEARCH OF ELEUTHERNA AND SYBRITA—REACH TYLISSO —ITS POSITION, COMMANDING THE HIGH ROAD ACROSS THE ROOTS OF IDA—PROCEED TO THE HAMLET OF KAMIROTIS—ARRIVAL OF AN ITINERANT QUACK DOCTOR AND HIS SERVANT—DESCEND INTO THE MYLOPOTAMO VALLEY—MEET AN INTELLIGENT OLD WOMAN—HER AFFLICTIONS FROM THE REVOLUTION AND FROM A WORTHLESS SON-IN-LAW—THE LARGE MOUNTAIN-VILLAGE OF ANOYA UPON THE FLANKS OF IDA—A SUPPOSED MARBLE "COVERED WITH INSCRIPTIONS."

WHILST the coast between Candia and Retimo (the ancient Rhithymna) was being surveyed by our tender and boats in charge of Lieut. Mansell and Messrs. Stokes and Wilkinson, I despatched the 'Spitfire' from the town of Candia to reprovision them in the Bay of Bali, and with directions for her to proceed afterwards to Suda Bay, intending to go myself by land to meet her there, after I had made an examination of some parts of the island lying intermediate between Candia and Suda, more especially to search for the sites of Eleutherna and Sybrita amongst the western roots of Mount Ida.

After starting at an early hour from Candia, we proceeded along the shore of the bay to the foot of the hills near Armyro; an ascent thence of about a quarter of an hour brought us to the ruined khan

and café some little way up the mountain, where a spring and some few fig-trees afforded us temporary refreshment and shade from a hot morning sun, and the adjoining café yielded some bad wine and rakee to my thirsty muleteers. Half an hour's ride to the south-west over the shoulders of a ridge which extends from the foot of the high peak of Strongilo, rising like a cone immediately over the western coast of Candia Bay, brings us to the modern village of Tylisso, or Dylisso, occupying the upper portion of the site of the old Cretan town of Tylisso, which, from its advantageous situation, must have been once of some size and importance, as is shown by its coins and by the remains of the town itself.

For I was shown where some ancient tombs had recently been opened near the village; and I was told by the inhabitants that foundations of walls, consisting of large blocks, and also ruined arches were often met with there in tilling or excavating. This spot lies a few hundred yards to the north-east of and below the modern village.

But the name of this old town is applied also to the more evident site of the city, lower down, at some ruins nearly a mile from the present village, viz. Kato Dylisso, or the Lower Dylisso, and thus indicates the original extent of the old city. Some coins found at the spot were brought to me as a further proof of this. Although they were not of the city, yet I bought a

defaced silver tetradrachm of Eleutherna; on the reverse was a naked figure standing and holding a globe or ball in the right hand and a bow in the left, and on the obverse a defaced head. All this existing and traditional evidence was confirmatory of the opinion of Pashley, who says, when he was at the modern village of Apano Dylisso, or Upper Dylisso, "Although I heard of neither coins nor other antiquities, yet I felt no doubt that I was standing on the site of the ancient Tylisso," mainly from the similarity of the name; but it is strange he was not shown the lower ruins.

Apano Dylisso is two hours and a half from Candia, and is a village of about one hundred and fifty houses, of which thirteen are Turkish. During the time I halted at the village to examine the site and to rest from the heat of the sun, much civility was shown to me by the Greek inhabitants, who pressed me hard to remain with them for the entire day. But, as a long journey over mountains was before me, I determined to push on, as soon as the sun had declined behind Ida, unless prevented by the incapacity of my muleteers, who, I found, had evidently been spending the previous night at some revel, and were not disposed for or equal to a long day in such a hot sun.

The situation of Dylisso is fine—occupying a lower ledge or spur of the eastern roots of Ida, commanding an extensive view over the long and fertile valleys and ridges which formed the western territory of Gnossus,

and of the town and fine bay of Candia (now enlivened by a few lateen-sail fishing-boats and a coaster or two); and being situated on the high road between the western division of Crete and its eastern cities, and also with considerable fertile territory in its immediate neighbourhood, it could not fail to become a city of some consequence in the days when Crete was populous. Immediately above it to the west rises a rocky chain of mountains, which, branching from the eastern roots of Ida, extends to the sea at Cape Dia (near which was the ancient Cytæum), and completes an elevated ridge that forms a natural barrier right across the island. The way over this mountain boundary was thus in the possession of the ancient inhabitants of Tylisso, who possessed also considerable mountain territory on the route, in the little upland valleys and plains of Gonies and Damasti lying immediately above it.

It is a ride of nearly an hour and a half to cross this rugged ridge above Dylisso, and then to descend from it into the stony torrent-bed and valley of Gonies; and the torrent having only an exit through a very narrow and winding gorge in the mountain some distance to the south of Dylisso, which is impracticable by any road, renders it necessary to cross both the ridge and the valley intervening between Dylisso and the higher ridge of Gonies, in going from the former to the Mylopotamo district.

Gonies is situated high up on the western ridge bounding this enclosed valley leading to the gorge; the valley for the most part consists of poor soil, and is surrounded by disturbed shaly or schistose rocks and serpentine, which has protruded here and much discoloured and distorted the rocks in contact with it. We travelled over a mass of this serpentine for more than a quarter of a mile when passing through the valley at the foot of Gonies hill.

Gonies contains about thirty houses. Beyond it, at the head of the valley to the north-west, we hear of a small hamlet called Kamirotis, and by striking out of the "vasiliko dromo," as this mountain-track is called, from being the most frequented road between Candia and Retimo or Rhithymna, we reach it in a quarter of an hour. Selecting a level spot in one of the adjacent terraces for the tent, we soon had it erected, and were at leisure to enjoy the scenery surrounding this romantic little spot. We were now above the slaty rocks, and in the midst of the broken up and detached limestone crags that overlie them, with narrow cultivable ledges beneath, descending like a series of steps down their crumbling sides; and upon a few of those in the immediate vicinity of our tent were a variety of fruit-trees flourishing in the irrigation of a copious spring that issued from beneath a neighbouring crag, where we heard again the homely blackbird singing its vespers before retiring to roost.

This was the bright picture of a romantic little mountain location. Now turning to look at the village and its inhabitants, I found a sorry contrast. Four miserable hovels were all that were inhabited out of the twenty-five that belonged to it before the revolution. Of these four, one was occupied by a poor woman widowed since May last, from the inner recess of whose hovel proceeded, as I approached it, the piteous cries of a poor little girl, her only daughter, who, I found on inquiry, was at that moment suffering from a severe paroxysm of fever and ague, recently caught whilst gleaning a few handfuls of corn amongst the fields in the plains of Candia.

Shortly after my arrival, there came also to this hamlet two important-looking travellers in Frank dresses, although one bestrode a jaded mule, and the other a donkey. They, however, proved to be an itinerant Ionian quack doctor and his servant, belonging to Khania, but both natives of Cergo; and they were now travelling together, dispensing advice and medicine amongst the mountain-villagers, wherever there were unfortunate dupes sufficiently afflicted and able to pay for them.

Their object in coming here, however, was simply to obtain a night's lodging, having arrived too late to proceed to a more populous village. But as the male population of the hamlet were absent, and did not return from their labours till after dark, they were

patiently waiting their coming, near the widow's hovel, since none of the wives nor the widow dared to offer them lodgings in the absence of any of the male part of the community.

The poor woman, however, was induced to appeal to me for some medicine for her sick daughter, at the sound of which request the itinerant quack pricked up his ears and approached; but as poverty was so unmistakeably stamped within and without the cottage, he shrugged up his shoulders and walked away, neither revealing his mission to her nor uttering a word of sympathy. I had thought of offering him room in my tent, had he failed to obtain a sleeping-place at one or other of the houses of this small hamlet; but this severed our intended friendly acquaintance as fellow travellers, and, taking upon myself to prescribe for the poor girl, I gave a few quinine pills from my own stock, and recommended some absinth tea, as I found that they possessed the herb on the adjacent hills, and knew it, but not its tonic properties.

My mules were ready with their baggage soon after daylight on the following morning, when we proceeded westward, and in a quarter of an hour crossed the pass in the mountain above the hamlet separating the torrents or streams which flow down this root of Ida into the Melavisi on the east and the Mylopotamo on the west side. A sea of ridges stretches before us to the westward for several miles, enclosed

between the northern face of Ida and the lofty-pinnacled root of it, which here bends round parallel to the northern shore, and thus, branching round from the eastern base of the celebrated mountain, embraces in its sweep the rich and wooded district of Mylopotamo, formerly called the Avlopotamo.

The height of this pass must be at least 3000 feet above the sea. Descending from it into the head of the Mylopotamo valley immediately after crossing the pass, we asked every passer-by or peasant for information respecting the situation of the villages before us, and of any spot where ancient ruins of any kind existed; for I found that our guides, or rather muleteers, knew only the direct road down the valley to Retimo, and were useless when out of this track.

We at length accost an old woman on a donkey, journeying eastward. Belonging to the village of Anoya, not far distant, she proved of service in directing me to it, as neither of my guides had ever been there; and finding it a large village of 260 houses, I expected that it would prove to be an ancient site also, although the old woman, who said she had been born there, and had also lived there for ten or twelve years since her release from slavery, assured me that she had never heard of such a thing, adding that the only Hellenic places in the neighbourhood were Tylisso and Axo. As she was somewhat more than usually communicative and intelligent, I was led to inquire

into the history of her slavery, when she commenced a tale of woe respecting the afflictions she had sustained in the early part of the revolutionary struggle for independence, between 1820 and 1830. Pointing to her wrinkled features, she said, "These furrows are not the effect of age, but of my griefs. I am not old, although I look it." She appeared seventy, but was only a little over fifty. "My husband was killed by the Turks; my four sons were taken from me to Alexandria, whither also I and my only daughter were taken and sold as slaves. My four sons are still in Egypt. I was myself bought from the Turks by the Austrian consul at Megalo Kastron, and lived with him there for seven years afterwards as his servant, as a recompense for the purchase-money. My only daughter also was released, got married, and joined me in my native village; but the husband proved a vagabond, and ran away, leaving her with three children to maintain, and with hardly any means; and I am now going to some acquaintances and friends to beg for them a little bread till the time of the olive-picking."

The narrative was irresistible; and the manner in which it was related disarmed doubt, especially as I knew that it was a tale not uncommon in Crete of afflictions resulting from the revolution. Thanking the poor dame for her information, and receiving from her the accustomed prayer or benediction and expres-

sions of gratitude and thanks, we parted. Following her directions, we crossed the narrow valley, and fell into a zigzag path leading up the steep side of a ridge of reddish-brown slaty strata; in twenty minutes we reached the village, perched upon the upper edge of the cultivable territory lying on the northern flank of Ida, where the cultivation is chiefly carried on upon narrow terraces along the sides of innumerable narrow ridges, that here, like the fibrous roots of a large tree, shoot out from the base of the mountain.

This, however, is due to the presence of beds of schistose and slaty rocks overlying the grey hippurite limestone, instead of the surface consisting of great masses of the latter, as is the more general character of the slopes of Ida.

Disappointed in not finding any signs of the spot being an ancient site, although so large a village now, I halted in the lower part of it for about twenty minutes, merely whilst asking for information from the few peasants I met with. One at last rose and said he possessed a curious marble, "covered with inscriptions." Eager to see it, I followed him to his house-door, preferring to stay at its threshold, however, as it was mean and dirty, to entering within with the surety of returning with a swarm of fleas; for my enthusiasm for a new inscription or an antique did not quite amount to an indifference to such a result.

The mysterious and treasured relic was at last unfolded from the heart of a bundle of rags and presented to me, when it proved to be merely a fragment of a large fossil sea-egg, only somewhat more crystallized than usual, and with the markings of the ambulacra and spinal pedestals very distinct. These rows of dots upon its surface were the supposed ancient writing alluded to by the possessor, who, when I told him what they were, seemed even more disappointed than I was; for, from the geological evidence it afforded me (it being found near the village) that the marine tertiary deposits once overspread these lower hills, as it now does the open districts and valleys below, I found it of more interest than value. Some detached gravelly patches still resting on the summit of a few of the adjacent ridges had also partially indicated its former existence upon them; had it not been so, these upper shales and schists would doubtless long ago have disappeared, or been much more reduced by denudation and atmospheric degradation.

AXO, THE ANCIENT AXUS.

CHAPTER VII.

PROCEED TO AXO, THE ANCIENT AXUS—THE NATURAL STRENGTH OF ITS SITE—AN EARLY INSCRIPTION AT AN OLD SPRING—OLD CHURCHES—MY GUIDE A FRIENDLY PRIEST—HIS IGNORANCE OF THE GREEK LETTERS—ARRIVAL OF THE ITINERANT QUACK DOCTOR AND HIS COMPANION AT THE VILLAGE OF AXO—DISCOVER HIM TO BE AN IMPOSTOR—DESCEND INTO THE MYLOPOTAMO VALLEY—HEAR OF THE SITUATION OF ELEUTHERNA—PROCEED TO IT—THE ROCK TOMBS ON THE APPROACH TO IT.

From Anoya I was shown the situation of Axo, distant two or three miles, and immediately proceeded towards it by descending again into one of these narrow valleys;

and following it for nearly a mile and a half, I approached a rugged limestone-hill which seems to block up the several ravines leading towards it from Anoya and Ida; for seven or eight valleys unite their torrents on the east side of the rock of Axo. But it is seen, on a nearer approach, that the united torrents find their exit through the apparent barrier by a cleft or gorge which divides the rocky hill. The valley near the gorge is lined with some scattered groves of Ilex oaks, which are a small-leaved kind, and only useful for their acorns to feed the village swine. Several of the trees were of large growth, and at the time of our passing they were being thrashed by men, women, and children with long poles and sticks, to gather the ripe acorns from them, the inhabitants being all Christians in this neighbourhood.

On ascending over the limestone-ridge lying to the south of the gorge, we at once perceive evidences of the site of an ancient city, in the heaps of large stones gathered together and cleared on the hill-sides, wherever they were capable of being tilled, and in the abundance of fragments of ruins and ancient pottery in the soil so tilled. An ascent of 200 or 300 feet brings us to the top of the ridge, where, meeting with some Cyclopean walls, I dismount, and, ascending on foot to the top, find myself, on reaching it, close above the houses of the modern village of Axo, and also at the acropolis of the ancient city of Axus.

The hill upon which Axus stood has somewhat the form of a saddle, and vestiges of the Hellenic walls that almost encompassed it may be seen nearly all round it; but as they were not so necessary for defence to the south and north extremes, these being steep, none exist there. The accompanying view (at the head of the chapter) of the site and the modern village, which was taken from an eminence to the westward of it, will better convey an idea of the situation, and how a deep gap in the ridge to the south of the acropolis, and the deep gorge on the north, somewhat isolate the position.

The ancient city thus stood upon and around this saddle-shaped brow, the remains being more particularly abundant on the eastern side of the hill, the way we had ascended. The modern village of Axo, consisting of about forty Greek families, is situated on the west side of the saddle, near a copious spring which, gushing from the mountain into a little marble basin for the use of the damsels of the village, to wash their linen, irrigates some terraced gardens descending to some distance below.

Mr. Pashley not having seen a long inscription which I found upon one of the slabs at this spring, I copied the legible parts of it—which was a task that required some patient labour; for the linen being laid upon this slab (which is of marble) and beat during the process of washing, such ill-usage has greatly worn

down its surface, and defaced the inscription. But after trying the patience of a good-natured damsel for more than an hour, whom I had interrupted in this operation, and by keeping the stone constantly wet (for the letters were mostly indistinct from the want of a good light), I at length succeeded in deciphering some parts of this very curious inscription in characters partially reversed and of very early date, whereas, had it been found elsewhere, and no water to aid the copying, not many of the letters would have been made out. (See Inscription No. 5, Plate II.)

In the vicinity of this spring some of the finest specimens of Cyclopean walls existing at the ruins are to be seen; but they seem to have been made for the purpose of supporting terraces on which to erect buildings, and not for habitations or for boundary-walls, for the acropolis was perhaps the only part enclosed—unless its walls extended down to the spring. The discovery of Axus is due to Mr. Pashley; but his description of its situation and remains being too brief to do it justice, I have been induced, for the benefit of the general traveller, to describe more at length a place so interesting from the character of its site, and from having been a chief republic-city and preserved strong evidence of its importance in its numerous copper coins. It is stated, too, by one author that it was to a king of Axus that Battus of Thera applied for a pilot for the coast of Cyrene, when pre-

paring to colonize it by order of the oracle, which would seem to indicate that it was one of the chief cities of Crete at that time; but the story is also told differently, namely that it was Itanus that supplied the pioneer pilot—which is most likely, as it was a coast-town nearer to Cyrene. Probably Axus was at that time, by an alliance with others, the chief republic of Crete; and some of its coins seem to confirm this supposition, by a countermark which is struck upon them, consisting of a head or other device; and hence, perhaps, it was by the power and influence of the ruler or chief of that republic that the pilot was found at Itanus. If so, we are able to reconcile the apparently contradictory statements of the ancient authors regarding this point, interesting in the history of Crete, on account of the colony having risen into such importance at Cyrene, and ever since kept up frequent communication and trade with Crete.

The coins of Axus represent the head of Jupiter, with a winged thunderbolt (or a tripod) on the reverse—the natural emblems of the city that, being situated upon the roots of Ida, directly under its summit, and including within its territory the reputed birthplace of the God of Thunder, might be fairly considered best entitled to those sacred symbols of his power and worship. They have the legend ΑΞΟΣ, ϜΑΞΟΣ, or ϹΑΞΟΣ.

The site of Axus so strikingly resembles in its

characteristics the spots generally chosen by the early Greeks for the situation of their towns, that I was delighted to find it here; for the examples of such well-chosen and picturesque spots are rare in Crete. It awakened recollections, too, of travels and discoveries of bygone days in Asia Minor, especially in Lycia, with my departed companions Daniel and Forbes, and when the vigour of sounder health and strength gave a keener zest to the enthusiasm of research. Those massive piles of unwrought blocks, denoting a rude and early age, ever awaken, wherever met with, a peculiar interest; for they speak, by their simplicity and massiveness, of the state and condition as well as of the character of the people who raised them; and when mingled, as they in general are, with Roman or middle-age relics, formed out of meaner but more available materials, they then speak with greater force of the necessities of those early times. It is the want of such an association which deprives the ruins of the purely heroic or archaic city of Olus, in the east of Crete, of much of the effect which these Cyclopean relics are in general capable of producing when mingled with the meaner materials composing the ruins of more civilized times.

Among the ruins of Axus are six or eight small churches, most of which are left to decay from want of inhabitants to maintain them. They are all several centuries old, and denote times of populousness in the

middle ages. The most curious is that of St. Irene, partly excavated into the side of the hill, so that its small cupola of Byzantine architecture is alone seen rising out of the ground. The walls within are painted with rude fresco, but almost defaced by humidity. The church of Joannes, just over it, on the top of the acropolis, is spoken of by Mr. Pashley, it having an ancient tessellated pavement for its present flooring, and it evidently stands upon or within some foundations of an Hellenic building; a broken shaft of a column also is near; so that these combined vestiges seem to point out the site of one of the early temples, which here, as in many other places, have been converted into Christian churches. Walking leisurely in the vicinity of this church, I came suddenly upon the village priest, who was employed in ploughing a small patch of ground adjoining it. Surprised at this sudden appearance of a stranger, and he a Frank, he immediately drove the ploughshare deep into the soil, to tether his half-frightened cattle, and then poured forth a volume of queries as to where I had dropped from, and what I was in search of; for I was alone. Goodnature, however, was stamped upon his countenance; and a mere hint that I was an "Inglese" in search of inscriptions, Hellenic remains, &c., at once enlisted him into my service as a willing guide. I was thus indebted to him for enabling me to examine the entire site, and to purchase several of the copper

coins of the city, which, as soon as my desire was made known, through him, to the old women of the village, were brought to me by dozens, mixed in general with a greater abundance of Venetian. But in no ancient city in Crete did I ever fall in with a greater quantity of its coins than here. I was indebted also to my friend the priest for a fruitless visit to a cave upon the opposite side of the hill: I was informed by him that I should find an inscription there; and so I did, but I found that it was merely a few rude letters that had been cut or scratched upon one of the fallen fragments. I presume they were the same that had caused Pashley a similar disappointment; but as he does not mention that the "unmeaning scratches" he was taken to see were in a cave, or that they were in truth Greek characters, I notice it here, in order to prevent some zealous antiquary, who may hereafter visit Axos, from wasting his time and strength in a toil to the "speli" with "grammata." The priest saw my disappointment, and asked me if it did not speak of money (the common belief respecting inscriptions)—showing, by the question, his ignorance of the Greek characters, believing them to be symbols with some mystical meaning known only to the Frank traveller.

I was not surprised at this ignorance, because it is often met with, indeed in half the villages of Crete; but it always awakened astonishment at the preserva-

tion of any remnant of Christianity by such benighted ministers in these long-persecuted lands.

On my returning to the village I found our friend the itinerant doctor. As there seemed some hope of doing business here, he had declared his vocation, and opened his baggage to display sundry medicine-bottles, boxes, &c. Desiring now to obtain a good word from me in recommendation of his medical capabilities, he offered gratuitously to give advice and medicine to my interpreter, who was a little indisposed after his revel before starting; but as I rather slighted his attentions, his servant (evidently a co-partner acting in that capacity) began more zealously to extol the skill of the quack, enumerating, in the hearing of all the old women assembled, a long list of cures which, he said, his master had effected during his six months' peregrinations through the Messara and other parts of Crete, finally concluding with the assurance that he was a real *medico* and had received his diploma at Corfu,—which assertion, of course, confirmed me in the opinion that they were both impostors who, by the possession of a few drugs and some address, had been able, no doubt, to reap a good harvest among the poor credulous peasantry, of whom, unhappily, there are too many whom fever and other diseases through bad living have made easy dupes to such pretenders.

From Axo I descended by a rough, stony road on the south side of the valley which leads to Garisso.

On the left we passed the monastery of Lekomi, situated on the ridge, about half an hour from Axo. It affords a convenient position as a halting-place for a traveller who goes unprovided with a tent; but he will find neither accommodation nor food luxurious, the monastery being small, and the monks few and poor.

A steep lane, enclosed by myrtles, leads to the hamlet of Veni, where there is a water-mill. It is prettily situated on a spur of the hill, and surrounded by plane-trees &c. Passing it, we reach the metoki of Kateriana, at a mountain-spring three-quarters of an hour from Axo. Here we pitched our tent in a small garden belonging to a renegade Turk, who occupies a part of the dilapidated but once goodly villa of some Venetian proprietor. The spring irrigates several small gardens below, in which thrive oranges and pomegranates.

I descended from here to the Mylopotamo valley, at Daphnes, passing through Garisso, at which place the dark shales and schists of the Axo district end and are entirely replaced by white tertiary strata, which here extend along the base of Ida, as far as Retimo, the ancient Rhithymna, and lie nearly horizontal, having a slight dip away from the great central mountain.

We pass between Kastri on our left (hearing that it was only a middle-age or Venetian fortress) and Melidoni within the mountains on the right, where

exists the celebrated grotto in which nearly 300 Cretans were suffocated by smoke and fire during the civil struggle for independence between the Turk and Greek. Pashley has fully described this event, and the nature of the cavern; and therefore, although I have been within its deep and dark retreat, and seen the skulls and bones of those that perished there, I shall add nothing to his pages relative to the horrible and barbarous deed. But it is perhaps of some interest to record here, whilst referring to this cavern, that when I visited it, not a quarter of a century after the event, the skulls and bones were in some parts already becoming firmly fixed in the floor by a stalagmitic incrustation resulting from the occasional dripping of water from the calcareous roof; and I thus notice it as a caution to cave-explorers upon the fallacy of conclusions as to age deduced from the depth or amount of successive stalagmitic strata in calcareous caverns. I consider, also, that the stalactites of this cavern are far superior to those in the much-extolled grotto at Antiparos.

The Mylopotamo district, in which we are travelling, was formerly called Avlopotamo, which is still the name of the bishop's see; and, from the name of Episkopia applied to a village near it, one may infer that Kastri was the capital of the see in the early ages of Christianity, under the name of Aulon or Avlon—a place noticed by Stephanus.

A priest whom we met in our descent from Axo, well mounted upon a finely caparisoned mule, and whose appearance and manners denoted him to be one of a superior class of local clergy, directed me to Lefterna and Veni as the only places where Hellenic remains existed in the neighbourhood. I immediately determined to proceed thither; and as he belonged to the monastery of Arkadi, situated on a high plateau between them, the information was the more reliable, particularly as both these names were those of ancient cities in the neighbourhood. I was therefore desirous also to learn from him whether Sybrita, a town said to have been only eight miles from Eleutherna, could be discovered and identified by the name being still known at or near its site; but the intelligent pappas had never heard of such a name connected with any place within the whole district, much less at so small a distance as eight miles from Lefterna or Elefterna, which, he stated, was the name of some ruins near a small village called Prene.

He also advised me to go first to Alpha, and ascend to Elefterna from there, that I might see the numerous rock tombs on the way. This information made me more desirous to approach it from Alpha, a small village near the mouth of the Elefterna valley; and after we had proceeded southward from it about a quarter of an hour, we fell in with the tombs referred to, there being a group of nearly a hundred; and at

every 200 or 300 yards as we approached Elefterna we found five or six grouped together in the cliff overlooking the valley, and finally, at rather less than two miles from Alpha, others of larger dimensions, intended for families instead of individuals. These were from ten to twelve feet square, and had contained from three to six bodies each. I had time only to visit a few; but as all were excavated in the yellowish-white tertiary sandstone cliffs, were similar in design, and without architectural finish, there was nothing to induce a minute examination.

On reaching the ruins, we hastened through them, as the day was nearly closed; and ascending a narrow but perfectly flat ridge upon which the village of Prene was situated, we pitched our tent for the night in the neighbourhood of the village, near a few scattered well-grown trees of the ilex oak, the presence of which no doubt gave their local name to it.

We were now at the north-western base of Mount Ida, directly in the line of its narrow profile. The venerable and once venerated mountain consequently rose above us as a sharp, bare, whitish cone, majestic and brilliant, as its summit glittered with the last rays of the setting sun above the long, flat, and now shadowless ridges of the foreground, just before the short twilight which in these latitudes intervenes between day and night; and I sketched the view for my portfolio as a memento of the moment.

The village kine and swine were now wending their way home from the wild pasture of the adjoining valleys, without herdsman or call, but instinctively, from habit—and leisurely too, indicating (at this hour of prowling for prey) their conscious freedom from wild animals in this favoured island, in contrast to the neighbouring continents and, indeed, one or two of the Greek islands; for they abound in the former, and occasionally frequent the latter by swimming across some of the intervening channels.

By the return to the village, therefore, of the few milch cows its inhabitants possessed, we were soon regaled with a grateful bowl of new milk for our tea, which we enjoyed the more from being fatigued by the toils of the day.

CHAPTER VIII.

ELEUTHERNA—ITS SITUATION—NARROW APPROACH DEFENDED BY A TOWER—DAPPER'S ACCOUNT OF THE TAKING OF ELEUTHERNA BY METELLUS—THE SITE NOT VISITED BY PASHLEY—THE ACROPOLIS-PLATEAU—DESTRUCTION OF REMAINS—TWO HELLENIC BRIDGES — DOUBLE CHURCH—INSCRIPTIONS — COPPER COINS.

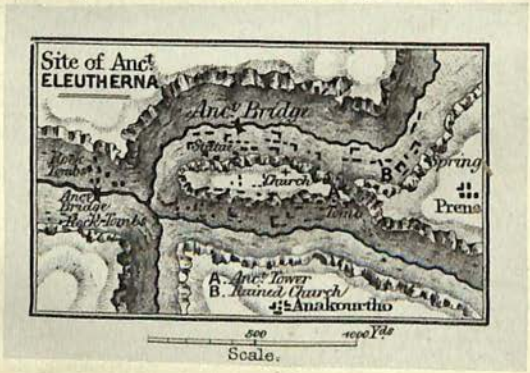
ELEUTHERNA was evidently a large and important city at one time; and one author relates that during one of its internal wars, it was taken by a strange stratagem, which consisted in softening the wall with vinegar, to render it more easily breached.

The hills lying around Eleutherna, at the north-west base of Mount Ida, have a remarkably uniform character, consisting of numerous long and narrow flat topped ridges with steep sides, and confined valleys separating them. The whole represents a broad cake of the white tertiary strata, which, having been uniformly elevated around the base of the mountain, with a slight inclination to the north, has become divided into parallel but somewhat irregular strips by the mountain-torrents descending from time to time from the slopes of Ida, channelling and cutting it up into long ribbon-like ridges, with contractions here

and there, that vary from a few hundred yards in some parts to a few yards in others.

The termination of one of these so contracted flat ridges was chosen for the site of Eleutherna, on account of the natural strength of the position; for, the upper crust of the ridges being composed of the hardest rock, a fringe of cliffs, varying from twenty to sixty or even eighty feet high, encircles the crests of nearly the whole of them, the softer strata forming gentle slopes beneath, which are terraced and cultivated down to the bed of the valley. There is consequently great fertility over these numerous ridges and valleys; and they are occupied by numerous populous villages, the largest of which is Margarites, about a mile to the east of the old city, but fully an hour's journey across the intervening valleys.

Eleutherna was thus well fortified by nature, although it is by no means a striking or picturesque feature in the landscape. In the form of its ground-plan it may be compared to a cricket-bat, or a bottle, the only entrance to it being by a narrow contracted neck of the plateau. (See plan.)



The narrow approach to the terminal plateau of this ridge, on which seems to have stood only the acropolis of the city, is about fifty yards long and from ten to fifteen broad, with the exception of one part, where it is not more than twelve feet across, and at the end of which stand the ruins of a solid tower of mixed masonry, about thirty feet square, thus completely commanding the only apparent and very narrow approach to the acropolis; for the plateau itself was so encircled by cliffs, that it required only a few pieces of wall here and there, where it was scaleable, to prevent access in any other direction than by this narrow neck of land, which a single square tower stopped as completely as a cork would the aperture of a bottle.

Now, in regard to the stratagem adopted by Metellus the conqueror of Crete, by which he became master of this strong and curiously placed city, Dapper gives the following account:—

"After he had caused much distress to the poor Cretans by his ravages and war, and having yet to gain possession of Eleutherna, this was effected by strategy and treachery in the following manner.

"It was commanded by a great tower, of such size that the place was considered impregnable, for it was the strongest work of the city and of the whole island; but by continually pouring vinegar upon the stones of the tower during several successive nights, they were

so softened as to be easily breached, and thus a way made for Metellus to enter and become master of the place" (p. 109),—an account which one is disposed, on reading it, to consider more a fable than history; but a glance at the accompanying sketch of its ground-plan, together with what I have said above, will show how much need the crafty Roman had of some such stratagem. And the remains of the very tower, some twenty or thirty feet high, are still there to confirm it; apparently the very breach also that was made to admit his troops is recognizable—and, as it would seem, just as he left it, without much enlargement or any repair since.

Moreover it is evident that the breach was wisely made at the end or side of the solid tower, instead of through it, since the masonry, when softened by the vinegar and loosened by the breach, would of itself fall over the cliff, which it overhung; and we consequently entered the acropolis by a narrow opening, which now exists over the western or left-hand edge of the cliff, and where the masonry has been broken down sufficiently to admit, at most, only a double file of men. Hence it is clear that treachery must have combined with strategy to aid the Roman conqueror in taking the city; and Dapper's apparently fabulous account is thus remarkably confirmed.

There certainly appeared to have been originally no entrance or doorway here; so that there must have

been another somewhere else, still more impracticable or better guarded, probably by some one of the catacomb-like excavations in the cliffs surrounding the site, but which we mistook for tombs. I therefore draw the traveller's attention to the search for the real entrance, not having met with the passage above quoted from Dapper when I visited the ruins, and expecting to have another opportunity of doing so.

There has been no previous identification (or at least no description) of this interesting city by any one, as Pashley passed it by, merely remarking in a foot-note that he "looked upon what is left of Eleutherna and Sybrita," on some unrecorded visit to their neighbourhood, without, however, indicating their precise location on his map; for that map evidently shows that he mistook Veni for Sybrita, and therefore could not have visited the latter, although he undoubtedly might have looked down upon both it and the district of Eleutherna in crossing from the monastery of Asomato to that of Arkadia. His map, too, shows no track to these places; and Eleutherna is placed so far out of its true position, that it is certain he did not see either of those places to recognize them.

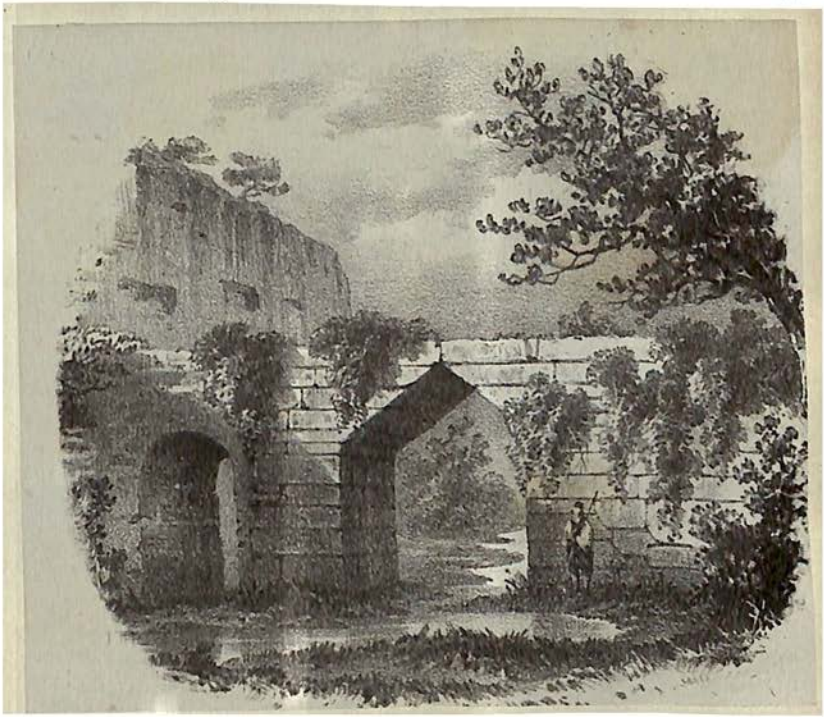
The plateau on which stood the acropolis of Eleutherna is cultivated throughout, and has a sprinkling of fine old olives. The remains within, however, are few—mainly the foundations of walls of habitations, and some ruined churches of an early date. On the

slope of the hill under the acropolis are remains of numerous terraces, as well as buildings,—the principal buildings of the city having apparently stood there, more especially on the eastern slope.

Upon one of the lower terraces on this side we found a mutilated statue in Parian marble; and near it were the remains of a fine Hellenic platform or terrace that may have originally supported a temple, upon which was a circular altar piece also of white marble, with a carved moulding of eggwork above, and fluted with diagonal and waving grooves down the centre of the altar; it has, however, a circular hollow at the top, like a baptismal font of the present time: but it must be of an earlier time than the Christian, and may be an altar of the Roman period, subsequently converted into a baptismal font. Although it had only recently been discovered in making some excavations there for building-stones, yet it was already in part broken up, for the purpose of being converted into lime, on account of the whiteness and fine quality of the marble; so that I fear none of it now remains.

The most perfect and yet apparently the most ancient ruins at Eleutherna are those of two Hellenic bridges,—one crossing the bed of the stream flowing in the valley just below the above-noticed site of a temple with the statue and altar; the other further down the valley, and below the junction of the streams flowing on either side of the acropolis, immediately

under some rock tombs—a sketch of which is here given, to show the condition and ancient character of these bridges. The arch of each is formed with



horizontal layers only, as were all the very early-constructed arches and vaults in Greece. And yet it seems evident that the idea of a circular arch was in the mind of the builder without his knowing how to form it; for there is an excavated arched way over a footpath by the side of the pier of the horizontal one, through the native rock that the bridge abuts against or projects from. This, however, may have been made subsequently; yet the association is curious and in-

teresting. The existence of two such well-built bridges here clearly shows this city to have been both wealthy and populous in early times, although at present the site itself contains so little other evidence of the fact, except its rock tombs.

Each of the cliffs under the acropolis is excavated into sepulchres in several places, some even appearing, from their size and the shape of their interior, to have been intended for the habitations of the living instead of the dead; and one of them is now used as a chapel, dedicated to St. Antonio.

At the turn of the valley close under the little hamlet of Prene, near a copious spring that issues from the hill-side, and picturesquely shaded by a few fine plane-trees, are the remains of a large or double church, dedicated to the Saviour and St. John, with several fragments of ancient columns near. Round the window-sill of the church is a Venetian inscription, showing that the spot was well known to, and inhabited by some Venetian families during their occupation of Crete.

In the vicinity of the spring was found a fragment of an inscription that contained the name of the city, thus aiding in confirming its identity.

It was also in the village of Prene that I found a fragment of an inscription, cut upon a slab of soft calcareous sandstone, making mention of Ptolemy Evergetes, and probably indicating an alliance or

connexion between this king of Egypt and Eleutherna.

The copper coins of Eleutherna have the name of the city upon them in full, thus, ΕΛΕΥΘΕΡΝΑΙΩΝ, and are not uncommon, being brought to Retimo frequently by the peasantry, and, from the number that are found, indicate that when they were struck it was a very flourishing city, and took its position in its turn as one of the chief republics of Crete, probably during its alliance with the Ptolemy in whose honour the inscription referred to previously as being found in the village of Prene was set up. The coins are of two kinds: one represents Apollo naked and seated upon a rock, with a globe in his right hand and his lyre resting against the rock, and has the head of Apollo also on the obverse; another has a bunch of grapes on its reverse.

Thus here, as in all the other cities of Crete, the emblems chosen for its early moneys symbolized the character of the city or the natural features of its situation. For, from my brief description only, the reader will perceive that this city stood in the midst of rural fertility and populousness; and therefore the god of sylvan song and pastoral music, with his appropriate emblems, was here chosen in preference to thunderbolts &c., or the head of Jupiter or of Vulcan as at Axos.

How appropriately was poetry applied, and how

well appreciated in its application, to social utility by those early Cretans! and the same poetical feeling is still indicated in the marriage ceremonies of the peasantry at the present time.

And what have we to show in the way of symbolical representations of our ancient communities? That of the Isle of Man is three legs, because, it is said, of the triangular shape of the island! and London, although the centre of freedom and civilization, and the largest commercial city in the world, adopted a blood-red dagger, which it still retains! Well may the New Zealander that is to wander over its ruins exclaim when he meets with this symbol, "Ah! here are embodied the feelings of the people that exterminated our ancestors; their commerce and colonization were therefore fitly represented by *this* emblem of their great capital"!

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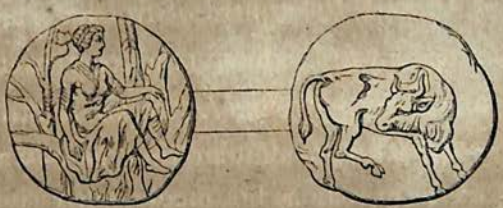
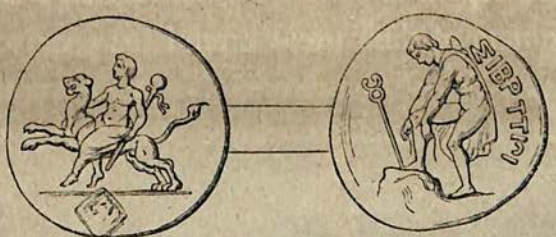
KHERSONESO.



GORTYNA.



SYBRITA.

The three coins represented above are selected to illustrate the artistic taste of the Cretan school, as applied to its monetary circulation, and are probably not surpassed by the known coinage of any other Greek community or city, for pictorial art or portraiture, either in regard to the human figure and face or animal action and form. These are engraved on wood by Mr. Thomas Scott, and admirably and truthfully portray the spirit of each subject. The two last are from coins in my own possession; but the first is restored from the obverse and reverse of separate coins in my possession and the British Museum—the coin in my possession with the same reverse having the head of Britomartis facing to the left, instead of the right.

CHAPTER IX.

LEAVE ELEUTHERNA IN QUEST OF SYBRITA—DISTANT VIEW OF VENI ITS SUPPOSED SITE—PITCH THE TENT AT APOSTOLO—HEAR OF ANCIENT RUINS AT THRONOS—ITS IDENTITY WITH SYBRITA CURIOUSLY CONFIRMED BY A NATIVE TRADITION—RETURN TO THRONOS—ITS DESCRIPTION—A FINE SITUATION FOR A CITY, COMPLETELY COMMANDING ITS TERRITORY IN THE TWO VALLEYS DESCENDING FROM IT—THE PROVERBIAL SALUBRITY OF THE SITUATION—RETURN TO RETIMO—GEOLOGY OF THE ROUTE.

TAKING a guide from Prene, I started soon after noon for Veni, judging it to be probably the site of Sybrita, from the information I received from the priest, and from the reported distance to it (about eight miles to the south-west) from Eleutherna corresponding with that given in the Itinerary table as the distance between those two cities; and as one of them had been already clearly identified, it seemed that the other must be at the next known Hellenic site. We consequently proceeded towards the south, ascending from Prene up the western root of Ida, and crossing it at an elevation of more than 3000 feet above the sea. We found here a sprinkling of oaks with small, pointed leaves, but trunks of large girth, showing that at this elevation they found their proper climate. From this

ridge, which divides the Mylopotamo from the Amari district and valley to the south, we were about to descend into a rocky ravine, or rather gorge, which cleaves deeply this face of Ida, and forms the head of a river or mountain-torrent that, after a westward course, turns sharply to the north and finds exit to the sea near Retimo; but on the top of the ridge we meet a little shepherd-boy, who, in reply to my inquiry, says he knows the place, and points out to us the site of Veni now nearly due west of us, and appearing as a remarkable table-topped hill standing conspicuously in the centre of a wide valley. It certainly looked an inviting site for a city of the old times, from its form and strength, and therefore my expectations were raised regarding it, especially when the little fellow assured us that there were abundance of ruins there. "It was an Hellenica polis," he said; "and my father lives in a metoki on the top." I therefore halted a few minutes to sketch the glimpse we got of it through the opening of the gorge, imagining that it must be the site of Sybrita. It was apparently a position well fortified by nature; and its exploration promised to be extremely interesting; for the known silver coins of Sybrita, although rare, are of extremely fine art and very beautiful.

After making a considerable descent to a spring by the roadside, named Nero petra, from having the reputation of being good for the stone (a malady very

frequent in Crete, among infants as well as adults), we then approach a swelling spur (extending from the roots of Ida towards Veni), from which rise two small rocky eminences above some cultivated terraces, and upon which the two villages of Klisidi and Thronos (the former Greek, the latter Turk) are situated. Upon the rocky eminence rising immediately above the latter we see some slight indications of a wall, but are assured by our guide that it is only of a Franko kastelli, and not Hellenic; and as my muleteers pressed me to go on to Apostolo, because it was nearly an hour nearer to Veni, and to pitch my tent there for the night, so as to be able to reach Veni at an early hour the next morning, I consented, and got my tent in order, just at dusk, on the west side of the narrowest part of a gap that separates the two valleys, running north and south, to the Ægean shore at Retimo, and the Libyan Sea at Messara Bay.

Apostolo is inhabited by Greeks; and as my guides were Greeks, their pressing me to pass hastily by the Turkish village of Thronos was natural, and the motive plain.

The tent-fire attracted the villagers after their day's work and their supper, particularly as my interpreter was loquacious; and whilst talking with them upon the nature of the remains at Veni, and how much of it was of the old Hellenic time (for they sometimes retain some slight veneration for such, if aware of their being

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so), one of the most intelligent replied, to my great surprise, that Veni was only a Genoese castle, and not an Hellenic site, but that Thronos was the kephala or chief city in the old time, "for there are remains of the city all down the hill under it on every side." That Thronos, then, and not Veni must be the true site of Sybrita, was evident if this information were true. But I was disappointed by the statement, as I had seen so little to indicate it in passing, and the hill of Veni seemed so purely Hellenic and so promising. The priest and the old men of the village were then referred to by me, and they all confirmed it, but replied that, as Thronos was a Turkish and not a Christian village, they did not often go into it or upon the fields its inhabitants cultivated. Yet they knew that Thronos was the kephala or head town of the district in old times, but they did not know it by any other name than Thronos.

On my then saying that I was looking for an old Hellenic city called Sybrita, they unanimously told me that the name did not exist locally amongst themselves; nevertheless I learnt this curious confirmation of its being the site of Sybrita, through the preservation of the name amongst another community, in the Messara:—"Oh!" said one of the oldest, "that is the reason why the people about Metropoli (Gortyna), in the Messara, always call us, as well as the people of four or five other villages near us, the Tzivrites"

when speaking of the head of the Amari valley,—a name which the reader will immediately recognize to be Sybrita itself, only modified, as usual, by the vulgar prefix of *Tz*. The identity of Sybrita was thus apparent, and it only wanted the site to be properly explored to confirm it. I therefore returned to Thronos the following morning, instead of proceeding to Veni, and found the remains indisputably those of an early Cretan city which had at one time been of considerable size, and, from its situation commanding the two fertile valleys lying below it, of considerable importance also.

Sybrita may be said to be now represented by the five villages of Thronos, Klisida, Kaloyero, Genna, and Apostolos, which are situated either upon or within half a mile of some parts of its ancient limits. The beautiful coins known of this city, as I have before remarked, indicate its early importance as an independent republic of Crete. It was also the see of a bishop in the earlier Christian period; and one of its bishops, named Cyrilles, was mentioned at the Council of Chalcedon, and another, Theodorus, at the second Council of Nice.

This ancient city occupied the sides of a steep eminence that stands over the low neck or col which connects the base of Mount Ida with the base of Kedros the ancient Cedrius, and the rugged chain of mountains extending from it through the western part of

Crete, this col being also, next to that over the isthmus of Ierapetra, the lowest in the island.

The hill of Thronos is surmounted by two rocks, one nearly a hundred yards across, the other, three or four hundred yards to the east of it, being smaller; and the village of Thronos stands upon a small terrace or spur in front of the gap between the two rocks, where, amongst the habitations, I saw some remains of an Hellenic ruin (three or four courses of the stones being visible), also several fragments of columns, and a mutilated statue. In the gap between the two rocks there are some Cyclopean remains; and the larger rock had its summit enclosed by walls, part of which appear, however, to be of middle-age date. I saw also, about halfway down the south face of the site, a rock tomb near some remains of massive Cyclopean walls that both supported terraces and apparently formed part of the walls of an acropolis or upper city, independently of the stronghold upon or enclosing the two crags surmounting the city. There are also vestiges of the ancient city around the north and west face of the hill, down to the col or neck which leads to Apostolo, consisting of Cyclopean walls, terraces, marble fragments, and much pottery in the surface-soil.

A finer site for a city I have not as yet seen in Crete, unless it be that of Arcadia, which by its two crags it somewhat resembles in its general aspect, as it

looks down at once upon the whole of the Amari valley and the valley of Veni, and holds the key of the most practicable communication between the north and south coasts in the whole of the part of the island westward of Ida, the route being by the Nero Petra spring and over the upland plain near to the monastery of Arkadia; for the valley which runs to the north of Sybrita and Veni is shut up to the north-west of the latter hill by a precipitous gorge, through which only is there room for the exit of its waters into the bay of Retimo.

After these evidences of the former existence of a large Cretan city at Thronos, I could not expect to find Veni so important as it had been previously represented; but as, from its peculiar appearance, it looked inviting, I proceeded thither the following day, guided by an intelligent native of Apostolo. And it proved, as he had stated, to have few remains of any kind upon it, although I found traces of Hellenic or early Cyclopean walls at its north extreme, where it is easiest of approach, with remains of middle-age masonry built upon them and also on the margin of the plateau in two or three other places, but especially at its south-west extreme, where there are high walls, built of small stones and mortar, to defend a weak part of the approach, and where there was a later entrance to this hill-city or fortress. The whole area of the flat summit of Veni, which is nearly a mile long, is culti-

vated, and the only vestiges shown me there were those of cisterns. It belongs to the monastery of Arkadia, the monks of which have a metoki or farm upon the east face of the hill, about 100 feet below its summit. The middle-age remains upon the hill-margin may consequently be only those of an early Christian stronghold and monastery, built after the destruction of the earlier city that stood there, of which there are now only a few vestiges. Although the remains were so insignificant, I nevertheless presume it to be the site of a small town of the same name as that it at present bears, viz. Bene, which is only casually mentioned by an early author, and quoted by Dr. Cramer as being a small town subject to Gortyna—as Sybrita doubtless was at the same time, which explains how the name of Sybrita, or Tzivrites, is preserved only amongst the traditions of the inhabitants of Gortyna, at the opposite base of Mount Ida, and so distant.

This remarkable insular hill, as also that of Thronos, I found to be a detached portion of the miocene marine strata that form the chief tertiary deposits in Crete. They both, however, present evidences of a freshwater deposit around their bases, in a series of gravels, sands, and marls of a totally different character and colour to the former; and I ascertained their freshwater origin by observing the casts of the same species of freshwater shells as occur at Khersoneso,

on the north shore, near the ancient town of that name.

Their position here seemed to me to indicate that the freshwater sea encircled the south coast as well as the north, so as to reach the head of this valley. Nevertheless it may have been the remains of a purely local basin; and as I had not time to examine the deposits over a great extent, or with sufficient minuteness, the point is noticed for the attention of future geologists: but, as there is additional fragmentary evidence further along the coast, to the westward (viz. near the monastery of Preveli), I am decidedly of opinion that Crete was once encircled by a brackish or freshwater sea.

These several scattered evidences of deposits of freshwater origin in Crete are, therefore, of interest and value in connexion with those I have from time to time noticed as existing in some of the neighbouring Greek islands, as well as on the south coast of Asia Minor, at Xanthus &c., places without the archipelago barrier.

The situation of Sybrita I have before noticed as being one of the most commanding and most suitable of any I have yet seen in the eastern part of Crete; for almost the whole of its cultivable territory is within view, and adjoining. Its modern name of Thronos is suggestive—a throne whence all its possessions could be surveyed. A view of the whole is here given

as seen from the high hill of Veni, to the west, the Thronos peak being conspicuous under and to the left of Ida, which is here seen clothed in its most usual cap of snow. The salubrity of the situation and air of Thronos is such, too, according to the aga of the place (an Albanian, but long a resident there), that "I have lived here thirteen years, and never had a headache," was his reply to my questions regarding the healthiness of the spot, which, with the medicinal spring of Nero Petra in its vicinity, before noticed, and the fine scenery around this natural throne imbosomed within the western roots of Ida, was indeed a highly favoured locality in Crete.

We found here a very small fig that only ripened in November; this, however, was its only peculiarity; the tree was of the ordinary size, and the dried fruit, although small, was excellent in flavour. The most admired coin of Sybrita is a silver one. The obverse represents Bacchus riding on the back of a panther and holding the thyrsus in his left hand; and on the reverse is Hermes, naked and seated upon a rock, tying up the sandal of his right foot, with the name of the city in full. It is a good specimen of pictorial art and design.

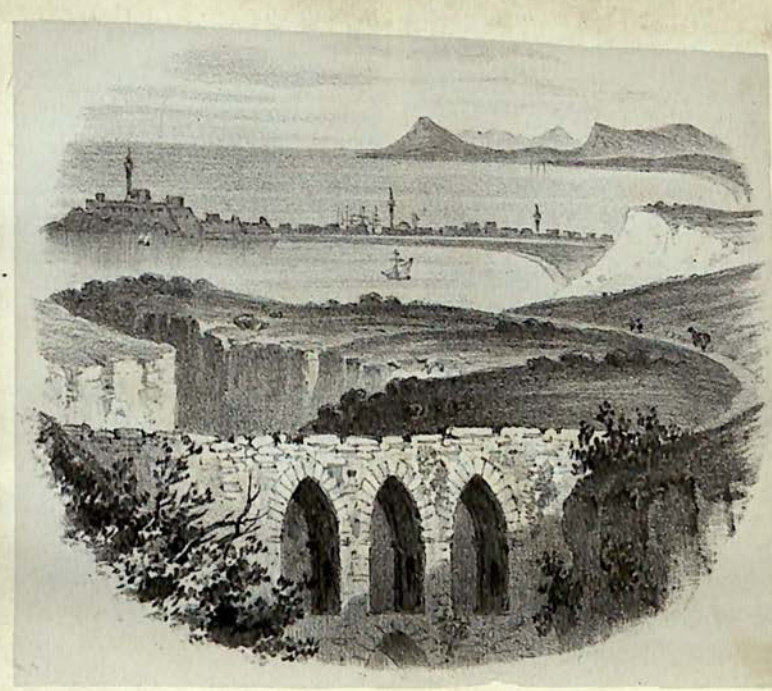
Although I journeyed through the Amari valley from the Messara, and slept a night at the Asomatos monastery within the valley, as there is nothing of interest to relate of the journey, and Pashley notices the monastery, as well as that of Arkadia, upon the upland plain over Thronos, and has given views of them, I shall only briefly describe my return to Retimo from here on this occasion.

It is evident that Pashley missed the discovery of Sybrita by passing through Klisidi instead of Thronos, his Greek guides, no doubt, having led him that way on account of Thronos being possessed by a Mahommedan community.

In crossing the upland basin of Arkadia, I also found the superficial deposits to contain fresh- and brackish-water shells. But between it and Retimo, after a little descent, the road crosses over the yel-

lowish-white tertiary ridges of the miocene period, upon which and in the valleys between them was a fine olive-grove, that extended all the way down to the shore, between Retimo and the Mylopotamo district.

Emerging from this grove, after a short ride by the beach near the city-gardens, we enter Retimo, a fortified city, the third in importance in Crete, and possessing now an important local trade, and a small port for coasters and light-draught schooners or brigs. It is governed by a pasha, whose province extends round all the western base of Ida and southward to the borders of Sfakia.



VIEW OF RETIMO (RHITHYMNA).

CHAPTER X.

SITUATION OF RETIMO—COMMANDING FORTRESS—STEEP PROMONTORY—POPULATION AND TRADE—PORT—RUINS OF PANORMUS—BAY OF BALI—MONOPARI KASTELLI—POLI, OR GAIDUROPOLI—RUINS OF LAPPA AT POLI—FRAGMENTS OF ROMAN AGE—THE NAME AS FOUND IN TWO INSCRIPTIONS—CHARACTER OF THE LAPPÆANS—DERIVATION OF THE NAME GAIDUROPOLI—AN INTRIGUE—SFAKIAN ENCROACHMENTS—DRAMIA—ELEVATION OF THE LITTORAL MARGIN AND SEA-BED—PASHLEY'S CRITICISMS—THE ONLY LAKE IN CRETE—HELLENIC BRIDGE.

RETIMO differs strikingly in situation from the other two fortified cities on the north shore of Crete; for

Candia retires from a straight shore, Khania surrounds a small inlet or bay, whilst Retimo extends over a small promontory, as seen in the accompanying view, which I made from the hills over it to the westward, near a picturesque, middle-age, double-arched bridge or causeway spanning a ravine on the direct road from Poli, the ancient Lappa, to Retimo.

Retimo, as will be seen in the view, has a commanding fortress of some strength and size, surmounting a rocky eminence upon its extremity, but which was not built by the Venetians until after the town had been surprised, sacked, and burnt by the arrival and hostile attack of some Turkish vessels in 1597, the need of such a defence having been thus shown when it was too late.

The promontory is also partially defended by a cliffy and steep shore on the west side of it, and by batteries on the east. There is a small artificial port on that side, but with its entrance so near to the sandy shore and shallow water at the root of the point, that it is difficult to keep it open, and consequently it is only available for vessels of very light draught.

Retimo has a population of about 10,000, and some trade in oil, valonea, and soap. It has barracks for the Turkish troops, the usual bazaar, some few good houses that were built by the Venetians, as well as churches and a handsome tower near the port, that have withstood the inroads of decay and the shocks

of many earthquakes, since they quitted it two centuries ago. On its site was an ancient coast-town of nearly the same name, Rhithymna. It could not have been then of any great size or importance, although it struck copper coins of two kinds, two fish being represented upon one, and a trident upon the other; for, although of copper, they are so rare as to indicate a limited use of its own coinage. As a port it probably belonged to both Eleutherna and Lappa, the two principal cities near, although Panormus on the coast, near the outlet of the Mylopotamo valley, was a more convenient place of export for the former city when the weather was favourable, but it is without shelter. Panormus, however, was particularly the trading-place or port of the Mylopotamo district, of which Axos was the capital, and it was in consequence mentioned as its emporium. Each republic no doubt had at times its own trading-station on the coast, to avoid collisions and maintain their independence.

The site and ruins of Panormus are now visible at a place upon the coast called Roumeli Kastello, on an eminence above a small beach, and bay indenting a long rocky shore, at about six miles east of Retimo, and due north of Eleutherna. The remains of Panormus consist of parts of the exterior walls and towers of a small fortress, ascending the brow of the hill, with the foundations of buildings within and adjacent to it, and are in part Roman and in part of a later

date. There are also tombs in the rocks upon a low ridge adjoining the ruins; and these appear to be chiefly Roman likewise—such an origin being moreover indicated by its modern Greek name of Roumeli Kastello, or Roman Castle. The cove afforded no shelter for coasting-craft unless they were hauled ashore upon the beach; but about five miles to the eastward of it there is a bay called Bali, or Balee, where coasting-craft now find shelter during the northerly breezes of summer; and this bay of Bali must therefore have served as a temporary anchorage for the traders in the old time to remain till the sea and winds were calm enough to embark the produce from Panormus, since Bali is not easy of access from the interior, being enclosed by high and steep mountains, which almost shut it off from the Mylopotamo district, although so close to it. Bali must be the place which is written Astale in the 'Stadiasmus,' and is there mentioned as being a very useful port.

In proceeding to Khania from Retimo the coast-road is both tedious and long, being for a great part upon heavy sand along the strand, or over rugged rocks just above the sea-shore; and if the traveller is not in haste, he may avoid it, and vary the scene by an inland track towards the south and south-west to two ancient sites, the first near Monopari, about two and a half hours from Retimo, and thence to Poli, the site of Lappa, a city that was once one of the most

important in Crete, and flourished about the time of the Roman conquest of it: it is noted for having at an earlier period given refuge to the Lyctians, or Lyttians, when their city was surprised and destroyed by the Gnossians during the civil wars which, subsequently to Minos's reign, frequently disturbed the island.

The Monopari kastelli, the first-named of these inland sites, was a small picturesque fortress upon the top of a high triangular-shaped rock, precipitous on all sides but the north, where it is approached by a narrow neck, yet presenting a very bold and steep face on this side also, although not precipitous. There are, however, evidences of a double, if not triple, line of walls to defend its only approach; and these appear to be both of the earliest and the latest style of

MONOPARI KASTELLI.

construction, the more modern parts of the walls having towers and appearing to be of middle-age date.

The above is a sketch of this site, as first seen on approaching from Retimo, but I was not able to ascertain its ancient name. I visited it in a journey from the southern coast, and not from Retimo. The road to it, however, from the latter is not difficult, although an intervening ridge of mountains above 2000 feet high has to be crossed; and the way will be enlivened by a village or two, and during summer by the incessant song of the nightingale in the groves and valleys near them.

The Monopari kastelli is situated over the eastern branch of the Petro Kamara, the principal rivulet and valley intersecting the Retimo district; and Poli, the ancient Lappa or Lampa, is on its western branch, which divides the Retimo from the Apokorona district.

The intermediate route is intersected by steep ridges and deep valleys, channelled chiefly in the older yellowish-white tertiary strata, and which lie here in a sort of basin or hollow between the high mountains of grey limestone to the south and those which rise up behind Retimo and partially border the shore to the westward of it, and render the coast-road so tedious and rugged.

There are several villages (that of Rustaki being the principal) through which the traveller has to pass before arriving at the long ridge upon which Poli,

or Gaiduropoli, is situated, the summit of which is so narrow that the village (which is the most considerable of the district) overlooks both valleys.

A little to the south of Poli the mountains begin to rise abruptly, and the two valleys to penetrate deeply into them,—the village being just at the margin of separation between the yellowish and older tertiary strata and the grey and uplifted limestone of the hippurite and nummulite series, and therefore situated upon the uppermost strata of the light-coloured and softer deposits of the tertiary series, which incline away gradually towards the north shore at a small angle, and seem there to be intermingled with deposits of a later series; but the poverty of fossils there prevents perfect identification.

The ruins of Lappa or Lampa have been described by Pashley, and appear to be chiefly Roman. One of them, the most perfect that remains, a small circular ivy-covered ruin with recesses, was noticed and a plan of it given by Belli; it is similar in form to the circular brick building at Gortyna, and about the same size. (See Falkener's Class. Antiq.).

A few fragments of the Roman, and some perhaps of an earlier time, are found in the village; and to the north of it for some distance along the brow of the ridge are foundations of walls and scattered blocks, amidst deep-soil fields and beneath a grove of venerable olives, whose well-gnarled and hollow trunks in-

dicate centuries of growth and endurance. But they are not witnesses of tens of centuries, neither could they retain a record of the events of those times, if they were of such age. Old stones, however, sometimes do; and the two inscriptions Nos. 8 and 9, Plate II., which were recently found in digging for the foundation of a new house, and which are now built into its front, from which I copied them, show that the name of the city was more properly Lappa, it being thrice written upon them, as upon the known coins of this city, and that Lampa was therefore a later corruption, although more frequently mentioned than Lappa by the authors who have noticed the city. Lampe is now the name of the district lying to the south of Retimo, showing that the intermediate form was a corruption of the earlier name found upon its coins. These are the only known inscriptions that have been discovered in this city of which a record remains; and therefore the fact of their being inscribed with this older name of the city is the more interesting as confirming its identity, since Pashley was the first who conjectured that it was Lappa, previous writers supposing, from the resemblance of its modern name of Poli, that it was identical with Polichna, whose exact situation, however, is not clearly indicated by any ancient author, beyond that it was between Cydonia and Gnossus!

The ancient Lappæans were evidently characterized

by military valour and a generous sympathy for the unfortunate brave, as is shown, first, by their alliance with and hospitality to the Lyttians after the destruction of their city by the Gnossians, and, secondly, by the fact that Lappa held out bravely against the Roman conqueror of Crete, after Cydonia, Eleutherna, Gnossus, and Lyttus had submitted, and was then only taken by storm and destroyed by the successful general. It was rebuilt, however, by Augustus for services rendered by the Lappæans at the battle of Actium. But the modern Lappæans are said, by their compatriots and neighbours the Sfakians, to be the reverse of their ancestors, having shown a rather pusillanimous disposition during the long revolutionary struggle in Crete, previous to the battle of Navarino; and hence, I was informed, the name of Gaiduropolis, or city of donkeys, is now usually applied to their town, which was previously, and in official records still is, designated Polis—a name significant of its having been at one time the principal city of the district. Its copper coins are not rare; the figure on them is either a lyre or a bull's head or face which, curiously, has one horn crumpled and the other straight or natural, no doubt alluding to some local story or tradition now lost.

When I visited this city in 1858, to obtain some details that were wanting for the completion of the chart of the western division of Crete, I was hospitably

received by the family of a resident Sfakiot, but found, nevertheless, that my kindly reception, accidental as I at the time thought it to be, was the result of an intrigue by one of the relatives of that family, who had been deeply implicated as a leader in a revolutionary disturbance of the previous year. As my intended visit was previously known, it was thought a good opportunity to make capital out of the occasion, by impressing the partisans of the Sfakian worthy with the belief that I had come expressly to have a private interview with him, and in support of his cause; for I found afterwards that my muleteer and guide was a relative of this worthy, and that he himself, too, waited in a secluded valley and olive-grove intermediate between Poli and Armyro to meet me on the way, apparently by accident, but in reality in accordance with a well-planned plot that might either have embarrassed me with the local authorities or led the poor duped peasantry into false expectations of a direct sympathy, or more than sympathy, with their cause.

But his appearance and retinue, and other significant indications and expressions which escaped from my guides at the moment he was first seen, put me on my guard before I had quite crossed to the side of the valley where he was waiting for the interview.

I at once questioned my interpreter, on seeing the party, as to the meaning of all this, and then dis-

covered that I had unconsciously been nearly drawn into an interview with a compromised Sfakian chief. Immediately perceiving that all sorts of political surmises might result from the act, and, to suit the views even of parties not connected with his aims, all sorts of constructions might be put upon it, I thwarted the plot by turning suddenly off in another direction, and forbidding the interview, as I would not exchange a word with him or any of his companions, informing the parties near me, at the same time, that my mission was for science and research for their individual information and good, as much as for that of the whole civilized world, and not for local intrigue, and so bade them farewell as I thought. But I was nevertheless conducted to the house of his relative in that village, where I believe he himself slept, unknown to me, as I persisted in my determination not to see him whilst there, little thinking I was then in some degree within the snare he had laid for me to further his objects. The circumstance much annoyed me; and I relate it here as simply one of many I have experienced during the progress of the survey of this island so celebrated for intrigue, both foreign and local, and for internal revolutions. The past education of a Cretan, like that of the oriental and Greek generally, has been so much in this direction, even in the common transactions of business, that it will take generations to direct the

mind to more salutary and also ultimately more profitable ways and means of gaining success, since mutual mistrust produces mutual intrigue, and makes progress in prosperity and civilization slow.

The view from Lappa upon the district lying to the westward of it, and upon Armyro Bay, with the headlands of Drepano and Malaxa, is commanding; and the district is in parts very fertile, enclosing several prettily situated villages, as Patenia, Kastellos, and Kurna.

It belongs to the Apokorona eparkhia, although separated from it by a difficult mountain-pass through the range of hills lying over Armyro. It may now, however, be called the lowland territory of the Sfakians, as they have little by little become possessors of considerable land within it since the Revolution, by obliging many of the Mahommedan population that in part peopled it to retire to the towns and sell their lands for what they could get; for the Sfakians so worried them by stealing their cattle or their produce, and so alarmed them by continual night-descents from their mountain-plains of Askypho and Kalikrati above, and by wanton violence and bloodshed, too, when an opportunity offered of indulging in them without detection, that one by one the Mussulman peasants at length succumbed and retired.

In the Sfakian winter-village of Dramia, situated on the shore of the bay, Pashley recognizes (from the

similarity of the name) the ancient Hydramion, a small town attributed to Crete; the Amphimales Sinus of Ptolemy is evidently the wide bay between Retimo and Drepano; and the ancient city of the same name, shown by Stephen Byzantius, quoted by Pashley, to have existed, may have stood at or near Armyro, as he concluded.

The 'Stadiasmus,' however, places here a river and winter harbour, as also a fort called Amphimatrion, which probably is a corruption of the name of Amphimalla, noticed both by Strabo and Ptolemy in reference to this part of the island.

The harbour and river alluded to by the anonymous 'Periplus' is no doubt the deep but brackish water-stream of the Armyro, in the corner of the bay, where numerous springs, gushing out of the base of a hill a mile from the sea, and near the ruins of an old khan and castle, unite with a rivulet and torrent-bed that issues through a gorge from the Apokorona valley.

The entrance to the river is, however, now barred by rocks and a sand-bank, over which there is never more than three feet of water at the present time; but the adjacent coast-cliff shows that there has been a rise of fully six feet of the littoral margin and sea-bed, a rise which, from evidences in other parts that will be hereafter noticed, I can affirm has resulted from successive small movements since the time of the authors who have written of these Cretan cities. Yet

there is no record or local tradition of the fact, although elsewhere it has destroyed several old sea-ports, and thus tended in part to the desertion of the towns in connexion with some of them. This is an interesting physical fact that I shall have frequently to refer to in the concluding notice of the western part of Crete, and by which, until accident developed to me the late date of the movement, I was greatly puzzled in respect to many interesting points in the ancient geography of this part of the island.

It has illustrated to me one that I am induced to touch upon here, viz. that it is not wise and reasonable for any traveller too severely to criticise the errors of the scholar and antiquary who, from his love of the early history of these classic shores of the East, and from his desire to render it clear to the general student, illustrates their ancient geography, from past or present information within his reach, and devotes both time, learning, and talent to the clearing up of the many labyrinthic confusions such a task often presents, from the careless ignorance or presumption of many writers he has to refer to,—and especially that such criticism should not come from those who have had the advantage of travel and research, and have thus been enabled to rectify errors that naturally occurred without it.

Thus I am induced to think that my predecessor, Pashley, too often and too harshly comments on and

criticises some of the authors from whose works he must necessarily have derived valuable assistance; I allude more particularly to his comments upon the historical and geographical works of the Oxford scholar the late Dr. Cramer. And if the traveller or reader will try and reconcile Ptolemy, Pliny, the author of the 'Stadiasmus,' and others, upon the true position of Hydramion, Amphimation, Amphimalla, and Pantamalion, Aptera, Kisamos, and Minoa, even with the present detailed map of this part of the coast, he will not fail to recognize the truth of the above remark. I therefore leave him with all the learned discussion and research both Dr. Cramer and Pashley have so patiently bestowed upon them to assist him in the attempt, and refer him to the latter's description of the Apokorona district, and the routes within it, for further details of this part of Crete. (See Pashley, vol. i. chap. v.)

The only lake in Crete is in this neighbourhood, at two miles south of Almyro. It is deep and nearly a mile in length, situated under the base of the nearest spur of the Askypho Mountains, at the bottom of a crater-like bowl, and surrounded by thickets of brush- and underwood, which hang upon the steep sides of the enclosing hills. The water is as clear as crystal, and fresh; it must therefore have its chief source in the bed of the lake, since no torrent-bed opens into it; and when the rains increase the moun-

tain-springs, this also must increase in its supply, and swell the lake, which, in consequence of its depth and abruptness, has no marshy shore, and, I was told, contains no fish but eels. When an unusual quantity of rain falls, the lake fills and overflows its only low margin on the north side facing the coast, carrying with it numerous large eels, that then become strewed over the plain, thus confirming the statement of Buondelmonte the Florentine traveller, who mentions this fact. Pashley identifies the lake as the ancient Coria, near which was a temple to the Corian Athene or Minerva (vol. i. chap. v. p. 73); but I could find no remains or tradition to indicate its true site, although it doubtless stood there.

The only other remains deserving notice in this district are those of a fine and picturesque Hellenic bridge, between three and four miles up the Almyro gorge, on the road to Khania, in the neighbourhood of which Pashley vainly searched for the old Cretan city Hippokoronion, finding by the search only a Venetian and small Genoese fortress, the former at Alikampo and the latter at Provernia, within the Apokorona valley, which opens into the entrance to the inlet or gulf of Suda, which I shall dwell upon in the next chapter.

CHAPTER XI.

THE AKROTIRION PENINSULA—GULF OF SUDA—THE SIRENS—SUDA ISLAND—APTERA—SITE OF MINOA—BATH OF THE SIRENS—THE SEAL AND THE CUTTLEFISH—LEGEND AND ROMANCE—EVIDENCES OF SUCCESSIVE ELEVATIONS OF THE COAST—SUMMER UNHEALTHINESS OF THE SHORES OF SUDA BAY—ROAD TO KHANIA.

CRETE'S second great mountain, and indeed it might almost be called the first, but for the celebrity of Ida, since it is within a few feet of the same height, and a larger mass, rises up in a bold, broad summit from the western side of the Apokorona district.

It throws off from its northern root an oval iron-bound promontory or peninsula, measuring six and a half miles in diameter, which was anciently named the Cyamon promontory, but is now called the Akrotirion; it is terminated by the sea-beat headland and bluff of Cape Malaxa.

This peninsula forms one of the most important features in the contour of Crete; and under it is sheltered a deep gulf, the entrance to which is from the east, called the Gulf of Suda—a harbour which is one of the most capacious, safe, and easy of access in the Mediterranean.

The shores confining the entrance are wild and

picturesque in the extreme, especially the north-west shore of the Akrotiri, where bold bare cliffs overhang it. Cape Drepano terminates it on the east, in a narrow cliffy point somewhat bent or curved like a reaping-hook (hence the name), alongside of which the largest ship could rub her sides without her keel touching the bottom.

The inner shore of the Akrotiri is rather forbidding, from the absence of cultivation or vegetation, as its chief cultivated part lies upon the high plateau rising abruptly from 500 to 1000 feet above the shore of the bay, upon which are ten villages and a monastery of some repute, the church of which is dedicated to Agia Triadha (the Holy Trinity). There is another, called Agia Katholica, in a picturesque gorge over the north coast. Both of these have been figured and described by Pashley, as also by Tournefort and previous travellers, from being so near the town of Khania.

The southern shore of the entrance to Suda bay, however, is well cultivated and beautifully diversified by hill, and vale, and streamlet, olive-groves spreading over the retiring undulations within the Apokorona valley, from which the eye is carried up to the steeps of the Madara Vouna, or White Mountains, rising as a wall behind it.

It is said in classic fable, that it was here that the Muses and Sirens contested for the mastery in music and song, upon a hill over the inner point of the en-

trance to the Gulf of Suda, and that the Sirens being vanquished, and losing their plumes in consequence, threw themselves into the sea in front of it in despair.

A town afterwards rose upon the site of the contest, called Aptera, or the wingless, in consequence; and two white islands (according to some three, as there were three Sirens) rose from the sea to represent them: we now actually pass two, indeed three, whitish islets as we enter this fine gulf.

The largest is called Suda. It was well fortified by the Venetians, and was retained by them for some years after the loss of Crete, but at more cost to the republic than profit or advantage. It contains a small garrison of Turks now; but the fortress is crumbling to decay, and its few guns are useless, for a man's thumb or a good walking-stick can be introduced into most of their touch-holes.

The ruins and site of Aptera have been fully described by Pashley, who first identified them as those of this city (see vol. i. chap. iv.). Tournefort, Pococke, and others had, however, visited them before, but mistook them for Minoa, a more insignificant place, as did also the Venetians, in their account of the place. The city occupied the flat summit of a high and bold hill that directly faces Suda island.

There are fine remains of the city-walls upon parts of the hill-summit still, of both the Cyclopean and

Hellenic styles; and within them is a small theatre at the southern edge, near some tombs; also large cisterns in the centre and towards the northern part of the site, with a considerable ruin of a castellate character, which appears to be of the late Roman or middle-age time.

In the centre of the site is a small monastery, or rather a metoki or farm of the great monastery of St. John at Patmos, to which the ground upon the hill of Aptera, or Palaio Kastron, belongs, and is cultivated by the aid of a few Cretan peasantry; but the priest in charge complained bitterly of the thefts committed by his Sfakian and Apokoronian neighbours and co-religionists; for, said the good monk, "they steal my cattle as well as my corn, although it is all the property of the holy monastery."

Patmos has more than one metoki in Crete; and Mount Sinai has two, if not three, one of which, in the Plain of Khania, is now in charge of a very intelligent and enlightened old priest of that monastery, who for several years had the care of the Greek community at Calcutta.

The accompanying view is from the road to Khania, over the south side of Suda Bay, and looks towards the entrance, so as to show the site of Aptera on the one side and the Suda islets on the other.

Minoa, a place mentioned by Strabo and Pliny, was discovered by me to have been situated imme-

J. Schranz del from a sketch by T.A.B.S. Hanhart. lith.

ENTRANCE TO SUDA BAY

diately opposite to Aptera, on the shores of the Akrotiri. Its remains are seen just over a small circular inlet or cove naturally scooped out of a high cliff, as if the result of a downcast, with a small islet or peninsula extending nearly across it in front to complete the enclosure. A perfectly land-locked but natural port, like a basin or dock, was thus formed; but its entrance is now too shallow for anything but a small boat, from the uprising of the coast-line since it was first used as a Cretan harbour. The city-walls may be traced ascending on the east side of the port to the basement of a fine circular tower about halfway up the hill, with other vestiges more towards the top of the ridge, approaching the village of Sternes, indicating it to have been of some size and the Akrotiri embraced in its territory. Pashley had conjectured that it might be discovered somewhere here, when he corrected the error regarding Aptera's true position. Thus these two cities stood on eminences on opposite sides of the entrance to the Gulf of Suda and directly facing each other.

After passing the two inner white islands of Suda, or the metamorphosed Sirens, and the sites of these cities, the gulf becomes quite land-locked, and a deep and what was once thought an unfathomable part of it has to be crossed by the mariner before the anchorage-ground near the head of the gulf can be reached.

We found this deep depression, which has much

the form of an extinct crater, but without its volcanic evidences in connexion, to be 122 fathoms or 730 feet deep just within the islands, whilst the depth is only from twelve to fourteen fathoms between the islands and the points on either side without.

Whoever has crossed the deeps of the Ægean Sea on a calm sunny day can never forget the intensity of its ultramarine blue, as it combines the azure reflected from the firmament above, with the blue hues arising from its own crystal-clear transparency and profundity beneath. And if he so crosses this land-locked bowl, this bath of the Sirens (as we may fairly call the deep pool in front of Aptera), and is reflective, imaginative, he might pass from an admiration of the scene around, and of the submarine tints below, to such a reverie as the voyagers of past times doubtless did when slowly sailing over it with the fable in their minds, and at last might figure to himself the attempted flight of the Sirens at the moment of their defeat, and their plunge, with now plumeless pinions, into the clear blue waters—or perhaps even see them again, as mermaids, or nereids, returning to its surface for pastime, and scattering the pearl-drops from their tresses, as gems fall before the footsteps of a fairy. And if he had seen what I and many others saw in these very waters, in this very bay, as doubtless the ancient Cretans or the navigators to its shore often did, and had not modern science and experience to

guide him and settle his judgment, he might have believed in mermaids and sea-nymphs too.

Early one calm summer's morning, when we were lying at anchor off the Tuzla Scala, at the head of Suda Bay, and the surface of the bay was like a mirror, the officers and men then on board were suddenly attracted by something unusual that was seen splashing and apparently sporting upon the surface of its waters at no great distance from them, and to naked eyes looked remarkably like a human head and neck, with long flowing tresses, which, from its action, the creature seemed to be occasionally throwing and tossing about from side to side, or beating upon the surface of the then calm bay, as if to free them from their entanglement, or from the matted weed they had caught up from the rocky recesses of the deep whence the strange creature had come. A mermaid, truly! might easily have been the exclamation and belief of many who saw it, had they lived a century or two earlier.

And what was this phenomenon? is the natural inquiry. Merely a common seal that was disappointing a Cretan gentleman of a delicacy of the deep; for it was breakfasting upon a huge Octopodia, or species of eight-armed sepia or cuttlefish, with which it had risen from the bottom and come to the surface to free itself from the long tenacious arms which the strong and muscular creature had entwined round

the head, face, and shoulders of the amphibian; and as these arms are each provided with large cup-like suckers, the Octopodia's strength of hold is such that it could easily drown a man with two or three of them only, if the rest were firmly attached to a stone or rock at the bottom. Hence the seal's struggles and splashing to detach them.

When the seal had tired out by wounding, or half-drowned its victim in the air by remaining sufficiently long at the surface, it then leisurely and apparently playfully tossed and turned it over and over as a cat does a mouse; and thus represented to a distant observer all the fanciful attitudes of a mermaid in sport, or in the act of clearing her tresses from entanglements.

What more is wanting to explain the origin of mermaids, or perhaps even that of the fable of the Sirens of Aptera, over whose bath or pool we have been induced for a moment here to pause and to contemplate?

A charming land without legend, some may feel, is like a bird of bright plumes without song; and the love of the romantic is sometimes apt to steal upon us all; why, then, should it be rejected (since it is so legitimately a part of the mind's exercise) when roving amongst these classic lands and scenes? For romance is part of their ancient history and religion. Both are made up of profound stories of the at-

tributes of their gods and the deeds of their heroes —fictitious and true men. Even the profound and matter-of-fact mind of Macaulay could not wholly refuse it; for poetry peers through the conceptions of credulity, and the myths of imaginative minds; and that which wise men, in the dark ages of the past, have thought, and believed, or related, and such superstitions and creeds as have influenced their actions and feelings, we may contemplate too, because we can profit from them, from their contrast with the ideas of the times in which we live.

But if the reader feels that he cannot sip a little honey from such musings, he can easily pass from fiction to fact, as I wish him and the voyager now to do, by crossing with me to the north shore of the bay of Suda, without, however, plunging again into the bath of the Sirens, or giving it a thought. At about midway between the island of Suda and the head of the bay he will find an interesting evidence of the recent elevation of the eastern part of Crete, which I have before briefly alluded to. He will observe here that it took place by a series of small lifts during several successive epochs; for the coast being somewhat cliffy, and the cliff an indurated limestone, with the water off it deep, each successive level of its surface has left some indications of its wearings and position, the lifts appearing, when seen under a favourable light, to have been from 2 or 3 inches to

nearly a foot each, amounting to about 6½ or 7 feet in all. The cliff, too, is perforated with the holes of boring bivalves, the shells of which in many instances are still within and thus show the comparatively recent period of the movements. Similar perforations and evidences of elevation may be seen also near the head of the gulf, on the north shore, but sometimes at fully a hundred yards from its present margin; consequently the limits of the bay have been somewhat reduced, more especially at the marshy tract and salt-pans at its head, probably to the extent of one-third of a mile, if not more. The broad tract of low shore reclaimed from the muddy bed of the old shallow sea by this elevation occasions the unhealthiness of the atmosphere in summer, which has prevented any habitations, beyond a few wine-shops, from being built at the landing-place or scala, which takes its name of Tuzla from the salt-pans formed in the adjacent marsh.

From Tuzla Scala to the town of Khania, on the west side of the Akrotiri peninsula, is an easy and pleasant walk of about four and a half miles over a good road which is level until within a few hundred yards of the gates, when a little rising ground gives the first view of the fine bay over which Khania is situated, and of the fine plain and olive-grove lying to the south of it.

CHAPTER XII.

THE TOWN OF KHANIA—LITHGOW'S DESCRIPTION OF IT TWO HUNDRED AND FIFTY YEARS AGO—KHANIA OCCUPIES THE SITE OF THE LATER COAST-CITY OF CYDONIA—THE HOMERIC CYDONIA PROBABLY AT VRISES, NEAR THE PLATANOS RIVER—A LARGE ARAB VILLAGE NEAR THE EASTERN GATE OF KHANIA—LITHGOW'S ADVENTURES IN RESCUING A FRENCH GENTLEMAN FROM THE VENETIAN GALLEYS.

KHANIA, the second city of Crete at the time of the Venetians, is now its capital, although occupying only half the superficial area of Candia.

The fortifications surrounding it, which were entirely built by the Venetians, are still in a good state, as also are the greater part of their fine galley-arches, which formed their arsenal. It is an over-crowded town, as it was in the time of the Venetians, from the narrowness of the streets, the height of some of the houses, and the confined limits of its original plan. It is said to contain 12,000 inhabitants at present, and is in consequence not so healthy as Candia. Two streets of shops or bazaars run through its centre, from the port gate to the land gate, and thus separate the town into nearly equal divisions on either side, one of which is exclusively inhabited by Turks, and the other by Greeks. The citadel or keep enclosed an eminence

immediately over a rocky point, separating the eastern part of the port, or arsenal, from the western or commercial port.

Lithgow tells us that this part of the city (called the castle) "contained 97 palaces, in which the rector and other Venetian gentlemen dwell. There lie in it continually seven companies of souldiers, who keepe centinelle on the walles, guarde the gates and market-places of the citie. Neither in this town nor Candia may any country peasant enter with weapons. Truely this citie may equal in strength either Tara in Dalmatia, or Luka or Ligorne, both in Tuscana, or matchless Palma or Friuly; for these five cities are so strong that in all my travels I never saw them matched." This was our quaint countryman's account of his impressions regarding Khania in 1610.

The port is formed by a long transverse pier running east and west and enclosing a double bay, at the end of which is a handsome lighthouse. The foundations of the sea pier are partly natural rock and partly the old mole of the ancient harbour of Cydonia, upon the site of which city Khania undoubtedly stands: although this was disputed by Dr. Pococke, it was maintained by Pashley, and is confirmed by the Venetians' description of the relics found in that city when they were building their fortifications, particularly the remains of the theatre, as we learn by the manuscript of Onorio Belli, before referred to, for the knowledge

of which we are indebted to Mr. Falkener. The thick walls of the exterior fortifications and the arsenal have swallowed up nearly every fragment that remained of what was once one of the most flourishing cities in Crete. The copper coins of Cydonia are numerous and various. The silver coins are rare: some of them represent a hunter stringing his bow, accompanied by his dog; upon another type there is an owl, similar to that on Athenian coins, indicating that they were struck during the existence of some commercial or political alliance between Athens and Cydonia. The coins of Polyrrhenia and Priansus are precisely similar; they have been recently described in a memoir by my friend Mr. Poole, of the British Museum.

The several ancient authors, Scylax, Pliny, and Ptolemy, all clearly show Cydonia to have been a coast-city; and its position is unmistakeably indicated by the author of the 'Stadiasmus' as "a port with outlying rocks."

Cydonia, according to Herodotus, was a city founded by some Samians who had revolted from Polycrates; but the Samians were driven out of their new city and possessions, six years after, by the fleet of Ægina, and made captives (book iii. ch. 59).

But Strabo thought that Cydonia was also the name of an early Homeric city founded by one Cydones (book x. ch. 176), the inhabitants of which he consi-

dered to have been indigenous, and therefore that this was one of the most ancient of the Cretan cities.

It is probable, then, that there was an earlier city of Cydonia, besides that founded by the Samians, not on the same spot, but in the same neighbourhood, which latter opinion I lean to as an explanation of the difficulty; for I think it may have stood upon some inland eminence, such as the ancients would choose if available, since few, if any, of the very earliest cities of Crete were situated directly upon the shore. Such a site presents itself at the hill over Vrises, on the west side of the Platanos rivulet, about six and a half miles to the west of Khania, and two from the coast, where I found vestiges of walls, early as well as middle-age, encircling an inviting double-crested hill furnished with springs and natural terraces for the habitations and cultivation.

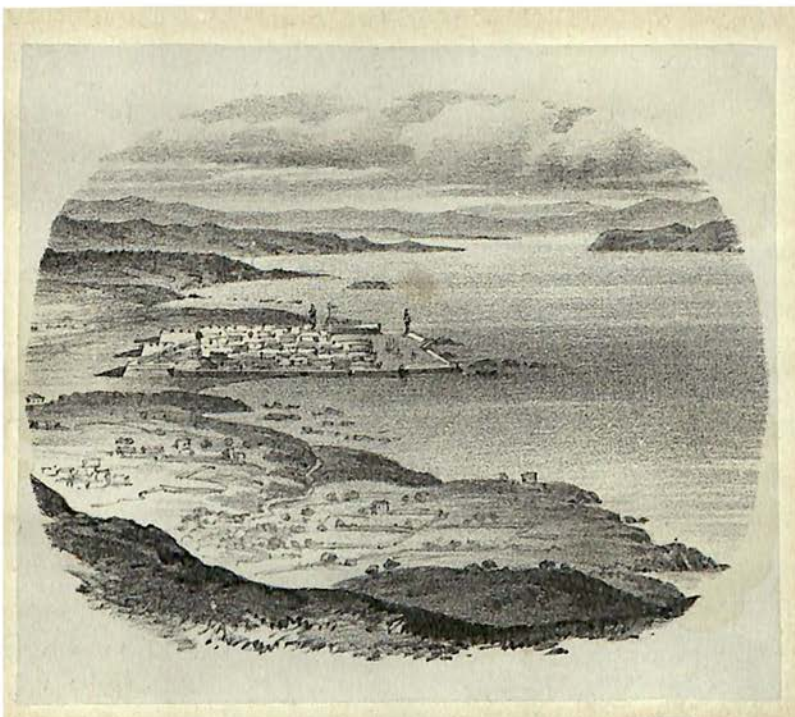
Thus I agree with Dr. Pococke in looking for the Homeric city of Cydonia in the interior instead of at Khania, whilst the Samian city was undoubtedly founded upon the coast, the former one having then probably gone to decay, or become depopulated by a visitation of the plague, which, it is said, more than once after the time of Minos, depopulated the Cretan cities; or perhaps it had given place entirely to its more important neighbours and rivals, Aptera and Polyrrhenia.

That the Homeric Cydonia was situated at the hill

of Vrises is apparently confirmed by Homer's mention of the "Cydonians who dwelt about the stream Jardanus" (Odyss. iii. 292), quoted by Cramer and Pashley; for the Jardanus must be the modern Platanos, flowing immediately beneath this site: and by supposing that the Homeric Cydonia and the Samian Cydonia were distinct cities, existing in different times and places, all the discrepancies between Pococke, Gell, Cramer, and others, in respect to the identity of Cydonia are reconciled,—the former of whom, however, recognized neither at Khania, but considered some remains upon a hill over Garipos, to the south-west of Khania, but which apparently are those of a fortified monastery only, formerly belonging to the convent of Mount Sinai, to be those of this city; whilst the two latter authors, Gell and Cramer, rightly supposed it to have been near the Platanos, but at its mouth, in order to reconcile the position with the Homeric account of the Cydonians being about or near to the river Jardanus, and also with the account of Herodotus, Scylax, Pliny, and others, that it was upon the coast—it not occurring to them that there were probably two sites, one for the earlier and the other the later Cydonia. Thus the splitting of this archæological straw balances the doubled-yelk egg, and, in my opinion at least, obviates all its geographical and classical difficulties.

The population of Khania and the trade to its port have greatly increased since it became the seat of go-

vernment and the official location of the European consuls; some of the consuls, merchants, and tradesmen, however, reside at the pretty little village of Khalepa, on the rising ground towards the Akrotiri, about a mile to the east of the town, from the top of which I made the picturesque view of the bay of Khania here given.



A large Arab village of between 2000 and 3000 souls has recently risen on the sandy shore just outside of the fortress on that side, the inhabitants of which have, for the most part, come from Egypt and

the Cyrenaïca since Khania became the capital. They are chiefly boatmen, porters, and servants; and it may be said to be the only Arab settlement in Europe where their habits of life and habitations are fully retained in every respect as in a pure Arab village; and the most arid and sandy part of the shore is selected, apparently as most resembling their own African coast and its associated desert. It is a perfect little African community and village in all its features, having also a sprinkling of Bedouin tents adjacent, in which dwell families of the purest Bedouin race and colour, most of whom fled from the Cyrenaïca during some recent famine.

In the singular old book of the adventurous Lithgow's travels from the year 1607 to 1626, called the 'Nineteen Years Travels' &c., which I have before quoted in reference to the supposed strength and condition of the town of Khania at that period, is the following account of himself at Khania in the early part of that time, which was thus nearly a century before Tournefort's visit. He relates his having assisted an unfortunate French Protestant gentleman of Languedoc to escape from one of the galleys lying in the port of Khania, to which he had been condemned at Venice when Lithgow was there, in consequence of the death of a Venetian noble, which was caused, in a street brawl, by a companion, who, however, escaped, whilst the innocent Frenchman, having

been present and being taken, was condemned. Lithgow, hearing that he was in one of the galleys then in the port of Khania, contrived to help him to escape; and having led him out secretly towards Suda disguised in woman's clothes, he left him there with the advice to escape to some distant monastery. He then relates his own difficulties on his return to the city, as follows:—

"And now many joyful thanks from him redounded. I returned, keeping the highway, where incontinent I encountered two English souldiers, John Smith and Thomas Hargrave, comming of purpose to informe me of an eminent danger, shewing me that all the officers of the galleys, with a number of souldiers, were in searching the city and hunting all over the fields for me. After which relation, consulting with them what way I should come to the Italian monastery, Saint Salvator (for there I lay, the vulgar towne affording neither lodging nor beds), they answered me, they would venture their lives for my liberty, and I should enter at the easterne (the least frequented) gate of the city, where three other Englishmen were that day on guard; for so there were five of them here in garison. Where when we came, the other English, accompanied with eight French souldiers, their familiars, came along with us also; and having passed the market place, and near my lodgings, foure officers and six galley souldiers runne to lay

hands on me: whereat the English and Frenche, unsheathing their swords, valiantly resisted their fray, and deadly wounded two of their officers. Meane while fresh supply comming from the galleys, John Smith run along with me to the monastery, leaving the rest at pell mell to intercept their following. At last the captaines of the garison, approaching the tumult, relieved their owne souldiers and drove back the other to the galleys. A little thereafter the generall of the galleys came to the monastery and examined me concerning the fugitive; but I clearing myselfe so, and quenching the least suspition he might conceive (notwithstanding of mine accusers), hee could lay nothing to my charge: howsoever it was, he seemed somewhat favourable, partly because I had the Duke of Venice his pasport, partly because of mine intended voyage to Jerusalem, partly because he was a great favourer of the French nation, and partly because he could not mend himselfe in regard of my shelter and the governour's favour; yet, neverthelesse, I detained my selfe under safeguard of the cloyster untill the galleys were gone."

Lithgow also relates that he made two journeys through the island, but gives no details of them. But in regard to the opinion then entertained that this island and gulf of Suda were the key to the island of Crete, and Spain's desire in consequence to have possession of or access to them, he writes as follows:—

"Being here disappointed of transportation to the Archipelago, I advised to visit Candy: and in my way I past by the large haven of Suda, which hath no towne or village, save only a castle situated on a rocke in the sea at the entry of the bay: the bounds of that harbour may receive at one time about 2000 shippes and galleys, and is the only keye of the iland: for the which place the King of Spaine hath oft offered an infinite deale of money to the Venetians, whereby his navy, which sometimes resort in the Levante, might have accesse and reliefe; but they would never graunt him his request, which policy of his was onely to have surprized the kingdome."

But this view was an erroneous one; for the Turks took Crete without taking Suda, and the Venetians retained possession of it long after Candia fell. Khania, too, had been taken by the Turks in 1646, twenty-three years previous to the siege of Candia, and maintained a gallant defence of fifty-seven days, during which the Turks lost by the valour of the Venetians and by plague 44,000 souls, which, besides the large number they subsequently lost at Candia, led to Crete being christened the "Mussulman's grave," and cost the empire more than Hungary, Servia, and Wallachia, before it fell entirely into their hands.

The fosse or ditch which surrounds Khania is wide and deep, and has become its chief vegetable-garden, chosen from its bottom being a dead level, and from

its having several wells of water, and a filthy stream, formed for the most part of the town-drainage, running through it; for, in Crete as in the Levant generally, irrigation is so necessary to all annual vegetation, to enable it to endure the summer heats, that it requires to be planted by the side of a furrow or trench into which the water can be made to flow once or even twice a day during this hot season of the year.

This no doubt was the practice from the earliest days of agriculture, and probably was nowhere more generally carried out than on the level fields of the delta of the Nile; but wherever the level ground was very limited or had to be artificially made, the utmost economy was necessarily studied, so as to make the most of the water and ground at the disposal of the planter.

Hence certain forms of trenching for irrigation became general; and no doubt it was from the plan of the ancient gardeners' trench that the simplest and earliest pattern for architectural mouldings and bordering was taken—which is now known as the meander pattern, from its supposed origin being that of the meanderings of a river, but which every oriental gar-

dener at the present day still gives to the channels

which convey the water to the plants that require daily irrigation,—first making the two long exterior parallel trenches or canals in the soil he has levelled and prepared, and then at intervals along them, on alternate sides, opening inwards as many rectangular spiral trenches as there is room to carry out, so as to admit water to every part. When irrigation is proceeding, each spiral trench is closed again, as soon as filled, with the earth temporarily removed from the side of the long canal, that the water admitted into each spiral may be all retained and absorbed around the roots of the plants within it; and thus each, in succession, is sufficiently supplied.

It will be seen, on consideration, that no other form would be so economical; hence the universal adoption of this, and hence, too, as it seems to me, the true origin of the antique pattern we all still copy and admire for its simplicity and general effect. I am not aware of this explanation having been before given; but if, an opportunity offering, the traveller will only look down from some elevation upon any oriental garden, carefully noting the exact form of the trenches by which its plants are irrigated, he will no doubt be struck with the extreme probability of the above being a true account of the origin of the meander pattern.

CHAPTER XIII.

APPEARANCE OF THE WHITE MOUNTAINS, AND NEARER FEATURES OF THE LANDSCAPE, AS SEEN FROM KHANIA—ASCENT TO THE VILLAGES OF KAMPOS AND MADAROS, UPON THE WHITE MOUNTAINS—THENCE TO A SHEPHERD'S MANDRI NEAR THE SUMMIT—HALT FOR THE NIGHT—PROCEED TO AGIO PNEVMA, ONE OF THE EASTERN PEAKS—CRETAN SHEPHERDS' BOOTS—SFAKIAN CLEFTIES—THE CHAPEL UPON AGIO PNEVMA—ITS GREAT ELEVATION AND SOLITUDE—NATURAL IMPRESSIONS AND FEELINGS SUCH PLACES PRODUCE UPON THE MIND.

In looking towards the south from the bay or city of Khania, the peaks of the noble mass of the Madara Vouna, the ancient Leuci or White Mountains, rise most picturesquely before one in a serrated arch, whose summits, after midsummer, appear bald and grey, but in winter and spring are covered with snow, the highest of these peaks being about 8000 feet above the sea.

Under this snow-line, with good vision or with a good telescope, the eye will define a zone of dark dots, which are trees of a species of cypress, but so scantily sprinkled that they hardly interfere with the light grey tone of the otherwise naked face of this mountain. Before this zone is succeeded by the cultivated lands bordering the sea, the eye rests upon a near

and almost level range of hills which rise rather abruptly from the bay of Suda and from the plain of Khania, and which are of an average height of 2000 feet above them; this is the Berecynthus Mount of the ancient geographers, and Mount Malaxa of the present time. Its face is cleft by two remarkable gorges, opening into the plain of Khania, at Mournies and Garipas, which descend from two elevated valleys lying upon, or behind the Malaxa range.

On the first of these natural plateaux or terraces are several villages, of which the principal are Malaxa and Keramia; and on the upper are Kampos, Drakona, and Therison, each large villages. These plateaux are bounded on the east and west, as well as on the north, by abrupt approaches and difficult defiles and gorges that are easily defended. On the east they descend into the Apokorona or Stilos valley (formerly the territory of Aptera), and on the west into the wooded and open valley of the Platanos.

The inhabitants of this upland district are a hardy and fine race of Cretans, partaking all the independent spirit and bearing of the neighbouring Sfakiots, but with less of their lawless propensities.

The Madara Vouna, or White Mountains, were ascended by Lieut. Mansell, Dr. Smart, and myself towards the latter end of the month of June, soon after my arrival in Crete in command of the survey. We reached the top of the Malaxa ridge in about

one and a half hour from the beach, and then descended about 200 feet into an upland valley, on which was a small hamlet called Kodopoulos, lying to the west of the mountain and village of Malaxa.

Crossing the undulating valley and a little rivulet in it, towards the south, we then ascended in succession to the villages of Kampos and Madaros, each situated upon the edge of similar valleys and basins, but much smaller than that of Kodopoulos. The natives received us in a very friendly manner in both, as our muleteers were from neighbouring villages. They appeared poor, and to live in a very primitive way; but they offered us the best that they had to give us, hard-boiled eggs and coarse bread, as the fruit-crops had not yet ripened at this elevation. At Kampos we halted for a time, and made our midday repast under a fine plane tree in this village of about sixty families.

When we rose to start for the mountain over us, although we had stayed under this tree for fully two hours, yet, just as we were mounted, some two or three of the inhabitants came pressingly to request that the doctor would see some of their sick. Though very inconvenient at the moment, from the delay, the appeal was kindly attended to; and the doctor was surprised to find that, notwithstanding its elevation and atmospheric purity, there were several bad cases of remittent fever in the village, which he attributed

more to bad food, raw vegetables or unripe fruit, and exposure to the sun and night-chills, than to malaria; for the men of the village were, on the whole, a fine race of mountaineers, and the women were fair and of good figure, but wanting a little water and a better toilette to fully develope attractive faces as well as forms.

From the village of Madaros, on a natural terrace above Kampos, the mountain ascends boldly, and in general is rather bare of brushwood and other vegetation; we, however, now and then fell in with the *Salvia critica*, a fine and beautiful shrub, which surpasses all other species of *Salvia* by the fine tufts of flowers it produces, and which, with some few other plants peculiar to Crete, was first described by Tournefort.

For a short distance we overlook the Apokorona valley, lying eastward, at the foot of the mountains; but after a little while we enter a narrow ravine, and our road is then in parts more fit for goats than mules. But the Cretan mules are remarkably sure-footed beasts, and we soon meet a string of them descending from the mountain to Khania, with lumps of snow well packed in fearnought to preserve it from melting by the way, and who daily ascend or descend by this wearisome mountain-track over slippery rocks of grey limestone that vary only in the thickness of the strata, and even to a geologist seldom yield a trace of a fossil of any kind to enliven the ascent by

an occasional investigation of their age or special character. Black flints were met with, however, in the ridge of Kampos, that seem to indicate their cretaceous origin.

We emerged upon a narrow shelf, at length, after three hours more ascent, just near the margin of winter snow; and our path then led us finally among some small sunken plains or basins upon the mountain-side, that were never more than a few hundred yards in diameter, or depressed more than from fifty to a hundred feet, each having a small level spot within it. Our guides halted at the largest of these, in which was a shepherd's mandri or sheepfold, one of the highest on the mountain, for our elevation was then about 6000 feet above the sea. Not far from it was a small rill, the water of which was carefully collected in scooped trunks of trees as drinking-troughs for the sheep instead of being allowed to run to waste; for it was not of much greater diameter than a goose-quill, and even such were rare in the upper part of the mountain, we having seen none other since leaving Madaros.

Our guides and the shepherds soon fraternized, and we pitched our tents by the side of them, to the mutual satisfaction of all; for we required their milk and new cheese, as well as one of them as a guide on the following morning for the remainder of the ascent, since we were told that it was practicable for a mule

for a short distance only, being for the most part, above the mandri, a trackless steep of naked and rugged rocks, with only a stunted cypress here and there to dot its surface with a few spots, and thus relieve also a sparse herbage that had sprung up since the snow had disappeared in the multitude of small crater-like hollows that pitted the surface above the winter snow-line, and were evidently due to snow and atmospheric action degrading or decomposing the calcareous rocks of the surface where accidentally softer than the surrounding parts—and not the result of subsidence, although some of the larger depressions or basins were doubtless due to the latter cause rather than the former.

The silent solitude of the scene at sunset was enchanting, and the contemplation of it delightful, from the play of lights and tints which fell upon the succession of ridges, valleys, and plains that were below; for on this side the mountain is very steep. But the view was entirely confined to the east and north; and Suda Bay lay at our feet as a shining white streak in the landscape, and the Akrotiri peninsula that sheltered it had all its inequalities level as a map or a plan.

On the following morning we were early on the move towards the summit, ascending over slippery shelves and sharp ledges of rocks upon which few shoes or boots of the best European make would stand much wear; for the snow's long stay had prevented the

growth of lichens and the accumulation of soil, and worn the rocks to a rough surface that made footing difficult, and acted as a rasp upon the shoe. The Cretan shepherds have in consequence had from the earliest times a very necessary but singular-looking sole to their boots, as all wear boots in Crete, peasant as well as gentleman. The soles are formed of a riband of untanned hide, tightly folded and sewn together; and this is stitched in separate pieces to the heel and toe of the flat inner sole, so as to present to the rock, for its wear and tear, only the edges of this folded riband of hide, like the heel- and toe-piece of a pair of wooden clogs; and as these are renewable by themselves, they save the boot, and are economical. Moreover, although clumsy and heavy-looking, they give the mountain shepherd a safer footing than a flat sole upon slippery rocks like these.

We ascended, after a climb of nearly two hours from the Mandri, a sharp conical peak called Agio Pnevma, half enveloped in snow still, and with a small chapel upon its summit that gave its name to the peak; and from thence saw the Libyan Sea on the south, and the island of Clauda, looking almost flat, under which, it will be remembered, St. Paul's ship ran to undergird after encountering the Euroclydon. Other islands were also seen on the broad Ægean to the north, faintly blue from their distance. To the west, however, as there were peaks a few hun-

dred feet higher than the one we had ascended, surrounding a series of small plains or sunken basins now filled with snow, and inaccessible, the distant view was quite shut out; so we were obliged to be content with the observations that could be obtained from Agio Pnevma, the height of which we found to be about 7800 feet above the sea.

Some beautiful little bulbous flowers and alpine plants were here and there open on the edge of the patches of snow, and were identical with those gathered from Mount Ida; and there was no apparent difference in the geological character of the rocks: all was grey stratified limestone, and the more thinly stratified the nearer the summit of this featureless mass of mountain, which is both rugged and steep, white and bare—snow-white for half the year, from the deep capping of snow that during winter lies upon its broad back, and whitish when it is gone, from the naked and bleached appearance of its light grey surface: hence its ancient name of Leuci, or the White Mountains; and its glittering crest can often be seen by the mariner when approaching the archipelago from the west, between it and the coast of the Morea,—thus, together with the equally lofty Taygetus in the Peloponnesus, forming two corresponding and noble portals to the channels of entrance into the classic highways—to Athens and to Troy.

We passed the following night at our bivouac near

the mandri, and feasted our guides and muleteers on a fat lamb roasted whole, and with rich milk and new cheese. The flock, as soon as milked, was led to the neighbouring crags to pasture during the cool of the night; and as Crete has no wild animals but badgers and weasels or martens, the Cretan shepherd's duty is much more easy than that of oriental mountain shepherds in general. Still the flocks are not perfectly secure, as we experienced; for shortly after midnight we were disturbed by a great shouting from the shepherd lads calling to their master at the mandri, that some clefties were stealing the sheep. The voices came from afar; for it is marvellous how far the voice can be heard at such elevations, especially in the still atmosphere of an oriental night. The owner of the sheep soon started off to the rescue, and returned, after an hour or two, with the information that they were Sfakian clefties, of whom they were always in fear; "for a Sfakian will rob his own father," was the shepherd's remark. The mountain pasturage is common to all the villages on this side, and therefore free (within agreed limits) to the Sfakian shepherds also. The cheese of this mountain was celebrated in ancient times; and the Sfakian masethra, a sort of fresh cheese, is as delicious as that of the island of Samothraki, which is so celebrated, and with which the Sultan's table is supplied when it is in season.

Agio Pnevma is directly above the Sfakian uplands,

but at some four or five hours' distance; and the little chapel is a place of occasional resort for worship to the inhabitants of all the upper villages upon the eastern flank of the White Mountains.

The ancients of all religions had many of their holy places upon high mountains; and the modern Greeks have in consequence many temples of worship upon the summits of conspicuous crests and hills. I have noticed several, in these pages on Crete, besides that of Agio Pnevma, which is another of these chapels or churches set on high—nearly 8000 feet above the sea. And it must be confessed by those who have been mountain-climbers, even for sport or pleasure, that few places produce more solemnity of thought and feeling, or impress the mind more strongly with devotional desire, than the serenity and solitude that in general pervade a lofty hill.

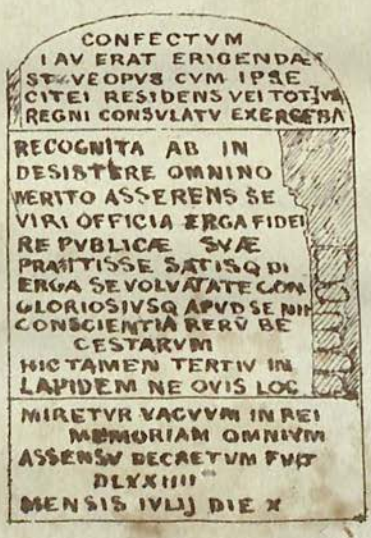
For, in being so free from and so far above the influence of the noisy world, one naturally feels as if drawn nearer to the Creator of all he sees, and of himself also. Such must have been the feelings of those we read of in the earlier or patriarchal days, who so frequently went to a mountain-top to prophesy or to pray; and our Lord's frequent exemplification of the same may have been intended in part to encourage the future Christian to do so also, on account of the advantageous influence of such solitude upon the mind. And the Greeks always pass a night at these moun-

tain chapels when they assemble there on the special days of worship.

The advantages of occasional solitude, the fascinating work of Dr. Zimmerman shows us in every point of view—a work I read in youth with more delight and pleasure than any I ever then perused. But it is amidst the stillness and solemnity which reign upon a lofty mount that this effect or impression is perhaps more easily felt; and it is, probably, there and then that we can more easily bring the mind to view the world we inhabit, wonderful as it is in itself, as only a very small atom in the economy of the whole created universe of worlds, and gain a somewhat clearer conception of the meaning of the words of Our Lord, "Before the world was," &c., in reference to Himself and our future.

For with the globe we inhabit now, as it were, at one's feet, and thus feeling oneself almost freed from it in body, as in mind, and surrounded, too, by the many millions of similar spheres or worlds that cannot be counted for number, one feels more fully that they too must have their individual creations and use, far beyond that of being the mere specks of light in the heavens they only appear to us to be; whilst millions are invisible to the naked eye, so that they indeed appear to be of no advantage whatever *to us*, and therefore *must* have their special use for other worlds and creations.

And the mind is then naturally inclined to think that in them we probably see the "many mansions" of which the Father's house is composed, and to one of which the spirit of man will one day wing its way for peace or woe. The idea may not be tolerated, perhaps, by the rigidly orthodox; yet it is something to some minds to be able to entertain something comprehensible in regard to the future, such as this, and to feel the strength of faith and hope thus conjoined with the beauty and economy of the visible universe, and thus to feel, too, that fortuitous generation and decay can have no place in the grand domain of reality.



Inscription in the Wall of the Arsenal Khania

CHAPTER XIV.

THE PLAIN OF KHANIA—LITHGOW'S DESCRIPTION OF THE PLAIN—ITS PRESENT ASPECT AFTER THE LATE CIVIL WAR—JOURNEY TO THERISON—A NARROW DEFILE APPROACHING IT—A VILLAGE COUNCIL OF WAR—CAPTAIN MIKHALI AND HIS FRIENDS—PROCEED TO HIS NATIVE VILLAGE OF LAKHO.

THE plain of Khania, stretching away east and west from Suda Bay and the foot of the Malaxa range for a distance of seven or eight miles, is almost wholly covered with olives. This sheet of mixed dark and silvery foliage is, however, enlivened and relieved by several villages situated along its margin, and by the appearance of scattered farms and the kiosks of some few rich Cretan proprietors, which peer above the foliage in its centre.

In the year 1609 this fine plain was thus described by our adventurous countryman Lithgow, in his peculiar style:—

"Trust me, I told along these rocks at one time, and within my sight, some sixty-seven villages; but when I entred the valley, I could not find a foote of ground unmanured, save a narrow passing way wherein I was, the olives, pomegranates, dates, figges, oranges, lemmons, and pomi del Adamo growing all through other, and at the rootes of which trees grew wheate,

malvasie, muscadine, leaticke wines, grenadiers, carnobiers, mellones, and all other sortes of fruites and hearbes the earth can yeld to man, that for beauty, pleasure, and profit it may easily be surnamed the garden of the whole universe, being the goodliest plot, the diamond sparke, and the honny-spot of all Candy. There is no land more temperate for ayre, for it hath a double spring tyde; no soyle more fertile, and therefore it is called the combat of Bacchus and Ceres; nor region or valley more hospitable, in regard of the sea having such a noble haven cut through its bosome, being as it were the very resting-place of Neptune."

This enthusiastic description by our countryman, and the general distant picture I have given, may lead the reader to hope and expect that this land bears still the evidences of continued prosperity and happiness. Let him penetrate the grove with me, and then the heart will soon grow sad at the numerous marks of devastation and ruin which everywhere meet him. Half-populated villages, partially restored farms and dwellings, and the smoke-black windows and tottering walls of others in ruin tell of the misery which has since stalked through this fair land, the result of a merciless war of extermination between the two races and religions who possess it—the one for independence, the other for domination.

More than one-third of a century has now passed since the conclusion of this war, and yet it will take

at least half a century more for the island to recover from the shock it sustained in that unhappy and fruitless struggle for independence. Fruitless, because the same masters have still possession of the soil, and because the freedom now possessed by the Christian Cretan in his right of property and religion has been more the result of civil progress and advancing moral force than of any physical pressure—a moral force which is every day growing stronger in support of the Christian subjects of the Turk, by the steady increase of the former and gradual diminution of the latter, and which has already placed them more free and independent than many of the subjects of the self-styled civilized nations their immediate neighbours. For the condition of the rayah of the present day bears no comparison to the condition of the rayah of fifteen years ago, or to the present condition of many parts of Europe or Russia, and, if allowed to extend, if unchecked in its progress by fruitless rebellion and discord, must in due course of time develope into strength, as the head of their outspreading olive-tree does above its roots, or as its branches outnumber them.

But the mountain patriot, in Crete as everywhere, impatiently sighs for greater freedom and for absolute independence, the freedom breathed in his lofty home keeping the desire naturally alive; but here indolent habits and misdirected thoughts unfortunately

keep it in a morbid fermentation, and often guide him to wrong and rapine instead of freedom.

The sword, therefore, which has already scourged so mercilessly the lowland Cretans hangs over their heads still, and is ready to fall at any moment that these restless spirits think opportune.

From what I have stated of the devastation and ruin still so evident in the vicinity of the present capital of the island, and upon one of its most fertile spots, an idea can be formed of what exists in all the low country of Crete. Ruin meets the traveller in every village, the result of a devastating war lies impressed upon the face of the land and upon many a countenance still, and a sorrowful tale is ever ready for his ear.

Mr. Pashley has given much of its history during the revolutionary war for independence; and although his trusty Sfakiot guide, Captain Manias, who was afterwards in my service in the same capacity, on several occasions, added many other incidents of individual interest, they cannot find a place here. I shall, however, in a trip to the south-west part of the island and the upland basin of the Omalo, on the western flank of the White Mountains, describe my route, as it is different from that followed by Mr. Pashley, and as the Omalo upland was not visited by him.

Hiring into my service as guide another old captain

of the revolution, Captain Mikhali, a native of Lakho, on a bright fine morning I started for Therison from Khania. The road we ascended to it was through the gorge of Mournies, situated almost due south of the gate of Khania, at about two and a half miles distance. A well-filled Turkish burial-ground is first passed after leaving the gate of the town, enclosed by a low and dilapidated wall; the wild weed grows rank upon this bed of sacred repose and human corruption, concealing many of its upright marble tombstones, inscribed and painted, or decorated with coloured rags and wild flowers: the usual cypress is wanting here—there being only a few of these emblems of an oriental graveyard, and those few of a spreading scrubby kind instead of the tall sombre spire which they usually form.

Crossing a gentle rise just beyond the burial-ground, we are soon in the olive-grove, and in half an hour reach the village of Mournies, forming a long narrow street of straggling houses, but well shaded with olive- and fruit-trees; and at the end of the village we enter the gorge.

A ride of an hour up the side of this defile, and for the most part by a steep ascent on the right, brings us to the top of the first steppe before mentioned, and near to the village of Panagia, full 1500 feet above the sea. This village is situated upon a small rocky eminence, with several hollows and enclosed basins in

its vicinity, which are for the most part cultivated. From Panagia we ride, for three-quarters of an hour, across two or three of these hollows to a wilder and more sterile part of the ridges; and after our ascent of them, we come to the edge of a ravine which descends to the Khania plain. Two very confined gorges meet here, the western one of which we enter; and after some windings across and across its rocky bed, between precipices and crags five or six hundred feet above us, and for a distance of nearly a mile, we then begin to perceive an expansion of the defile and a diminution in height of its overhanging steeps; and groves of cypress trees soon appear growing upon its expanding and less precipitous sides, with vineyards and other cultivation on the narrow ledges between the groves: this, and some patches of standing corn growing upon a narrow plain at the opening of the valley just beyond the gorge, shows that we are near some habitations. The mind, however, was still disposed to dwell upon the formidable character of the defile we were still in, serving as the portal to this mountain village and district; and we were thus led to contemplate how easily a few active mountaineers could defend it against very superior numbers, as, our guide informed us, they did during the revolution, driving back with considerable loss a column of Turkish troops that attempted to take the pass. Mikhali points out, too, as we proceed, where some Turkish chiefs fell, and where Christian

blood was spilt in its defence—incidents that helped to keep our interest alive throughout the pass.

On reaching the narrow plain, the bed of the defile is now no longer dry; a small stream here trickles over shingle and boulders, amidst luxuriant and venerable plane-, olive- and walnut-trees, amongst which, for a space of nearly half a mile, are scattered the detached cottages of the village of Therison. Thus nestled in this upper steppe of the White Mountains, it was a famed stronghold and retreat of several of the Greek bands engaged in the long revolutionary struggle for independence, and whence Mustapha Pacha, their late good governor, found it necessary to dislodge them, gaining possession of it only by a rapid flank approach upon the position by his Albanian irregulars. This, however, was of no permanent avail, since the active Cretan mountaineers only retreated to other mountain fastnesses until the troops were compelled to retire to their fortified cities again, from being in want of food and not having the enemy within reach of them.

We arrived at Therison on a festal day, when most of the male inhabitants were at home, lounging in idleness or discussing the chances and prospects of war and revolution, which at the moment were threatening.

Riding up to a little open space under some walnut-trees to seek for a spot to repose upon during the midday sun, we came suddenly upon such a group

assembled in front of the blacksmith's shop, the blacksmith himself being the chief orator on the occasion. He was a fine stalwart mountaineer of about forty, and, standing in front of the group, he was addressing them with great energy. The suddenness of my approach took them by surprise; the oration was immediately suppressed, some annoyance being depicted on their countenances, until our guide, Captain Mikhali, came in sight, when all arose, as no treachery could come under his guidance, and friendly greetings with the gallant old Lakhiot chief immediately followed.

Lakho and Therison, being neighbouring villages, were close allies during the war, and the inhabitants of each greatly distinguished themselves in the struggle for emancipation. We were welcome immediately, and every assistance we were thought to need was cheerfully given to us—first, in finding a place for our mountain barometers upon some pendent branch of a tree, and next in arranging our baggage upon the green bank underneath—the blacksmith being the foremost of the party, too, to render it. As we had made known our intention of resting here during the heat of the day, Mikhali and his companions were invited to a feast then immediately prepared for them, which for a time drew away the whole party, and left us to enjoy the shade in quietness.

About one mile south of Therison the mountain

begins to ascend bold and rugged to the upper zone of the White Mountains, where, however, the flocks of the village find good pasture on the small herbs which are constantly springing up there, or in browsing upon the tender shoots of the deciduous shrubs sprinkling its surface.

Leaving our Therison friends at 4.30 P.M., and ascending about 200 feet, we reached the summit of the western ridge, and then, to our surprise, found ourselves overlooking a magnificent valley full 2000 feet below us, which it was necessary to cross before either Lakho or the Omalo could be reached; but although somewhat steep, it is not impracticable for mules or unencumbered troops. It was consequently by this flank approach that Therison was taken by Mustapha's Albanian irregulars; and the ascent was made by them at several points.

The view over this valley and the western ridges, glowing in an evening sun, was very fine. Lakho was before us, nearly as high, on the opposite side, and, had the valley been bridged, looked as if we could reach it in twenty minutes; but this took full two and a half hours to accomplish by the zigzag paths we had to travel both in the descent and ascent.

Meshkla is situated at the bottom of the valley below, upon the side of the Platanos river—the largest river and torrent in the western part of the island, and flowing hence almost direct to the Ægean shore.

The Platanos in its upper course issues through deep and picturesque gorges, that separate the higher peaks of the White Mountains from the western shoulder, upon which is enclosed the upland basin of the Omalo.

As we passed through Meshkla, Captain Mikhali was again recognized, and warmly greeted, by some of his more than half-tipsy countrymen whom we met here. He was also nearer his native home, and of course better known amongst them. The greeting was therefore the more friendly, but more noisy under the influence of the generous wine of Kissamo—so much so that I was fairly obliged to halt for full twenty minutes, till the cup of friendship was handed round and round, and Mikhali's thirst, and his return greetings also, and inquiries for friends and connexions were fully satisfied; for although a Lakhiot, as he had married a damsel of Platania (which is situated at the mouth of the valley and river), and had been settled there for several years past, his appearance at Lakho or Meshkla was now not frequent. He was a remarkably fine-made, good-humoured, and mild old man, and, although near sixty, was active and quick as the ibex of his mountain.

Five wounds upon his body bore honourable record of his gallantry and sufferings in the war. One of them was a severe wound in the head by a musket-ball, which had dented a pit in his skull that was by no means pleasant to look at when he uncovered it. His reception everywhere showed the estimation he was

held in by his compatriots. Mikhali's father and two of his brothers were also killed in the war—losses sufficient to nerve his arm to execute vengeance, and to account for his bitter animosity against the ruling race. Mikhali will die proud of being a Christian and a patriot—with the cross held tight to his breast by one hand, but with the other raised in imprecation against the hated Turk. His wounds alone were *his* medals; for no ribbon or cross decorated his breast; but as he did not fight for them, so he did not expect or miss them: he fought for his country's hopes only—out of pure patriotism.

Thus musing, and admiring our hero guide, we reached a spur of the ridges on the west side of the Platanos valley; and after a further ascent by a steep and bad road, over broken shaly rocks, we came in sight of a part of the village of Lakho just above us, and of its little church upon the point of another spur rather higher and to the southward of the former. Mikhali immediately saluted the place of his nativity by a shout, and by the discharge of his long-barrelled tofek in the air, which he had ventured to draw from its hiding-place and proudly carried from the commencement of my journey, considering himself safe with it whilst in my service; for no native was then allowed to carry arms in Crete. The hills echoed the sharp crack and unusual sound, and aroused the attention of the villagers, who were mostly grouped

upon their house-tops, or reclining under neighbouring olive-trees, enjoying the cool of a midsummer evening after a day of idleness—it having been a saint's day; but in truth such days are mostly spent in revelling rather than in reverence of the saint or in devotion.

Winding round the head of the ravine, we reach the vicinity of the church just at sunset, and in a small field of stubble near it we immediately set up our tent, amidst the wonder and admiration of the women and children of the village at the rapid erection of so comfortable a house amongst them; and although many invited us into their own habitations instead, we preferred our own independence.

Lakho contains now nearly 200 houses, scattered around the steep sides of the narrow spur we are resting on; but all appear mean, comfortless hovels, sombre and dark as the slaty rock they are built of, without a patch of whitewash on any of their exteriors or interiors to denote either the appearance, the reality, or even the idea of cleanliness and comfort.

In so large and well-reputed a village we expected naturally to see at least one or two neat-looking houses, if not very large ones; but, as in many other villages, we looked in vain. Cleanliness of habitation and of person appeared to be equally wanting; the virtue of whitewash seemed to be unknown or despised; and thus, as dirt was not seen, its inconvenience was

not felt by them, and the traveller who has a thin skin and sweet blood would be wise in his travels through Crete, and would find it economical also, if he were to be provided with a small tent, in lieu of trusting entirely to the resources or hospitality of the country, which, however, he will find so willingly and kindly offered at most places, that it will be painful to appear to insult the kind people by refusing it; for hospitality is characteristic of the Cretan peasant.

Lakho is prettily situated, with cultivation descending from it on all sides; for, with remarkable industry, the hill-sides are terraced from top to bottom to support numberless little strips and plots of soil upon which the olive and vine flourish. These, in their arrangement resembling a flight of stairs, constitute the chief portion of the land cultivated by the Lakhiots. By seeing what an amount of subsistence and fertility can be wrought out of land comparatively so ill adapted by nature, one learns how large a population the island would support if it were as perseveringly and industriously cultivated throughout.

This spot, like most of the others, was no doubt chosen, in earlier times, on account of its elevated position and steep approach giving a greater degree of security to the inhabitants against surprise.

CHAPTER XV.

LEAVE LAKHO FOR THE OMALO — ASCEND TO THE FIRST PASS — LATE SEASON IN THE OMALO — A KATAVOTHRON — STONY VALLEY — SHEPHERD'S MANDRI AND HUTS — LOW TEMPERATURE IN THE OMALO ON A MIDSUMMER NIGHT — THE XELO SCALA TO ROUMILI — GEOLOGICAL REMARKS — VALLEY OF IRENE — MOUNTAINS OF SELINON AND KISSAMOS — CHESTNUT-GROVE AT SIVRANO — BAZAAR AT VOUKOLIES — TORTURES OF AN EXTRAORDINARILY HOT DAY — A SIROCCO.

THE calls of the harvest thin the village of Lakho of its inhabitants before daybreak the next morning; and, following their example, to avoid the heat of midday, we leave Lakho early for the Omalo upland, the direction of which is pointed out to us, behind the mountains lying due south of the village. But a deep valley separates the Lakho hills from the Omalo peaks; we have therefore to ride round its head, full two miles to the west, before we commence to ascend the bold and rocky face of the group of mountains enclosing the western upland basin of Crete, the character of which I was anxious to see.

After crossing the low neck joining the Lakho ridge with these mountains, for three-quarters of an hour's distance we wound up a rocky zig-zag path too steep to ride, and thus reached a little shelf on the side of the mountain, where there was a well to quench our thirst, and a large ilex tree to give shade during our

rest. The geological character of the mountains is here changed from the dark shales and schistose rocks forming the lower ridges to a compact grey and stratified limestone. The lower hills, however, are not the outcropping of the lower strata, but apparently a downcast to that level of the upper series.

On our ascent we met two or three large flocks of goats descending to feed on the stubble of the newly cut corn-fields in the lowlands.

The observations necessary to be taken on the route from Lakho, for the purpose of delineating the topography, caused the forenoon to be well advanced by the time we arrived at this little shelf; and, the day being excessively hot, the shade of this fine ilex tree, so near a well of water, induced me to halt in our journey. The view afforded over the south-west part of the Khania district also attracted us, it being for the most part cut up by narrow, forked ridges and valleys that we could now look into, the villages in which were here and there distinguished by the knots of trees around them, or by the appearance of patches of cultivation in their vicinity. We therefore enjoyed the survey of this sea of lower mountains till the sun had lost something of its power, when we again started.

Our road now winds through several narrow defiles and shut-up valleys running in an easterly direction and without much ascent between them; and after a

little more than an hour from the ilex tree and the well, we find beneath us the large upland plain of the Omalo, enclosed in a wall of mountains on every side, and looking like a green lake from the lateness of the fresh-springing crops growing in it, every part of the plain being tilled with oats; and although harvest was quite over in the lowlands, here it was dawning spring, and the verdant aspect very refreshing. At the summit of the pass descending into the plain the ilex and yellow broom were in full flower, the one tinging the mountain with gold, and the other with a blood-red hue, while here and there the hill was enlivened by a shrub or two of Cretan sage.

A descent of about 200 feet brings us into an angle of the plain—which has somewhat of a triangular form, with a gap or pass at the apex of each angle. We enter it by the northern one, and in a few minutes reach the katavothron or cavern by which the waters and melted snow escape, that in winter overflow the plain and convert it into a lake for some months.

It is a large vaulted cavern, on the right hand as we descend, about 150 feet long, but 10 or 15 feet below the general level of the plain, and terminating in an aperture that descends spirally, and nearly perpendicularly, into the bowels of the mountains and then, by hidden channels, finds an exit through them to one of the lowland rivulets.

There is no open channel leading to it, as the water

seemed to be absorbed in the middle of the plain, which, although in midwinter it appears to be quite flooded, is now quite dry everywhere and verdant.

The plain is here and there also studded with large though wild pear-trees, which no doubt, if properly pruned and grafted with good fruit, would yield a profitable supply. The soil looked poor at the surface, but, judging by the size of the trees, it is evidently rich beneath.

Riding across the plain towards its south extreme, our guides led us into a very stony valley, also full of these trees and other wild shrubs, chiefly the ilex, which literally grow out of a stream of loose fragments that here form the bed of the narrow valley, being washed into it from the surrounding naked steeps of thinly stratified limestone.

After a ride of a quarter of a mile over this stony river we arrived at a low hovel of loose stones with an enclosure adjacent to it—a shepherd's mandri belonging to the uncle of Mikhali. This accounted for his bringing us into this wilderness; and as it was impossible to pitch a tent upon such a spot, and the air was already exceedingly chilly within the valley, from its confined character and the sun having long left it, we turned out of it again, finally erecting our tent more in the open plain, nearer the western part of the Omalo, where there is a small pool and three or four wells in the neighbourhood of some other shep-

herds' huts, which, however, were now not occupied, as their flocks were gone to distant pastures.

The Omalo is inhabited by shepherds, but only for about two-thirds of the year, seventeen or eighteen families of whom, with their flocks, resort to it from the different villages in the vicinity below, viz. Roumili, Lakho, and Agia Irene. The earliest flocks are brought to it about the 1st of April, when the snow first begins to leave the mountains; but the plain is tilled a month earlier, if the water has left it. Around the edge of this plain there are consequently several good warm huts for men and cattle—built very primitively, however, out of loose stones without mortar; but, to ensure warmth, the walls are made very thick, and plastered within with mud and manure.

A series of meteorological observations with barometer, self-registering thermometer, and hygrometer was commenced as soon as we arrived, corresponding ones being made at the ship in Suda Bay at the same time; and the height of the plain proved to be about 4000 feet. The minimum temperature of the night fell as low as 38½° Fahr. in a calm, and the maximum of the day was as high as 78° Fahr., this being a midsummer day; whilst the corresponding temperatures at Suda Bay were 76° Fahr. as the minimum during the night, and 86° Fahr. as the maximum during the day.

At the eastern point of the Omalo plain there is a

difficult pass and road descending into the gorge of Roumili, to a hamlet within it called Samari, which road is called the Xelo Scala. It is the most magnificent and picturesque gorge in Crete, and descends as a yawning chasm direct from the pass to it from the eastern edge of the Omalo. It was reported to us to be impracticable for an animal; but I have reason to believe that an animal not overladen can descend by it, since we saw in the Omalo two Sfakian travellers on mules, who were evidently going in that direction from the road we had ascended. Also when in the Roumili gorge some time subsequently, not far from Samari, I met a mule and two donkeys laden with cheese, the drivers of which, to my question as to whether they had come from the Omalo, answered at first in the affirmative; but afterwards, when I expressed my surprise, the answer was corrected by the statement that it was from another mountain, apparently with a desire to avoid a reference to the Omalo.

The want of a practicable road in this direction thus completely isolates a large mountain district, and also allows the Sfakians to be approached only from the east, where, however, the roads and defiles are also difficult and almost as defensible; hence their independence. Still the route, even if made practicable for laden beast as well as man, could be easily defended by a few good rifles, and so would be safe in their own

keeping until they were outflanked or outnumbered. I was unable to penetrate in this direction, through being taken suddenly and unaccountably unwell. Lieut. Mansell, my companion on this trip, who ascended to one of the highest mountains over the plain in order to triangulate across the island, was likewise unable to go there. Our guides, too, were unwilling to take us, making all kinds of difficulties; and I do not recommend a traveller to try it against the native prejudice, as there is evidently some jealousy about it amongst them. The gorge of Roumili being opposite to that descending to Meshkla and the valley of the Platanos, the two almost separate the summits of the White Mountains from the Omalo group. In the latter there are displayed great disturbances and dislocations of the strata. This is especially evident by the almost vertical condition of some of the limestone strata, which are apparently members of the hippurite series; and the basin of the Omalo seems to have been formed by a doubling up, in connexion with a great downcast of the strata. The central mass composing the summits of the Madara Vouna, or White Mountains, are more nearly horizontal, or dip gradually away from the highest parts in all directions.

Feeling too unwell to remain in the Omalo another night, I start at 4.30 P.M. for Agia Irene, the road to which is by the pass at the western angle of the plain; it is nearly a mile long, but does not rise to

more than 200 feet above the level of the Omalo. Patches of cultivation continue to the head of the pass, above which is a sprinkling of trees that appear to grow out of naked rocks and from a soilless surface. The west face of the Omalo Mountains descends very abruptly to the deep valley of Irene, which we overlook as soon as we emerge from the pass; but we find, nevertheless, a well-trodden although rocky and slippery road down it—evidently an ancient principal highway to the Omalo, being supported in some places by vestiges of Cyclopean terraces, where it would have been otherwise impracticable; it must have been the chief approach to this upland from Elyros and Hyrtacina. On emerging from the pass, we looked down upon a deep and straight valley running nearly north and south, full 3000 feet below us, hidden in the depths of which are the villages of Agia Irene, there being an upper and lower one of the same name. And at the outlet of the valley, on the Libyan shore, are the ruins of the town of Suia, which was the ancient port of Elyros, the most important of the earlier cities in the south-west of Crete, and occupying a very fine site on the western side of the Irene valley.

The valley of Irene is bounded on that side by a ridge of mountains nearly of the height of the plain of Omalo, which therefore interrupted any very extended view over the western part of the island.

The sites of Hyrtacina and Elyros, however, are

distinctly visible on the summit of the southern branches of the range, over the coast. These two cities, although situated very near to each other, were evidently somewhat flourishing in the early period of Cretan history, both having struck coins. Their true sites, and the ruins existing at these, were first identified and described by Pashley, with Kantanos, Lissos, and Kalymede; but the two former cities being thus the nearest to the Omalo plain, and almost in view from it, the plain must have belonged to one or both of them.

The coins of both these cities seem also to confirm this view, indicating, by the adoption of the Ibex upon them, a common connexion with these mountains of the Omalo, from that animal being no doubt anciently, as now, exclusively confined to the mountains surrounding the Omalo plain and the White Mountains.

We were full two hours in the descent to the lower Irene, a great part of the way being necessarily performed on foot, from its steepness. The village lies hid in olive-trees, which grow upon the terraced sides and bottom of the narrow valley in which it is nestled.

Agia Irene is the first village within the eparkhia of Selino, and contains about fifty families. The bed of the valley is scarcely 100 yards broad anywhere near it; but we soon found a level spot for our tent, with a well near for the convenience of our mules

and our own requirements. The shade and shelter of an olive-grove was to us a luxury, after our three days' journeying and stay amongst the naked peaks and bleak plain of the Omalo. The village, too, being situated near the head of the Suia valley, at fully 1500 feet above the sea, is somewhat exempt from the malaria peculiar to such confined valleys, mainly from the absence of a rivulet in that bed. We were welcomed by the natives of Irene with great cordiality and hospitality, and on our departure the following morning no remuneration would be accepted for the fowls, eggs, and honey supplied us by them.

The Cretan Greeks on this side of the White Mountains were formerly closely allied with the Lakhiots, Therisots, and Sfakiots in all questions of internal interest, as they possessed communication with each other by the secret passes through the Omalo, besides having a common right to some portion of its territory, or to the mountains that surround it. They have also much of the manly, independent carriage and stature of the Sfakiot.

The western district of Crete has been so well described by Mr. Pashley, that, although I have visited Elyros and other parts of the eparkhia of Selino, I shall not here dwell upon them, but cross into the district of Khania by the gap which connects the Omalo mass of mountains with the lower ridges of the Selinon and Kissamos districts, in the former of

which are some very fertile and beautiful valleys, the most important being the Kantanos and Ennea Khoria valleys, the ancient names of which being still retained led to their immediate identification.

The mountains of these two western districts were so markedly different in general to those of the Omalo, both in character and colour, that I pause here to give a brief description of them. They are almost wholly composed of a mass of brown, red, and purple schists and shales, of a very friable nature in some ridges, and much indurated in others. These series of rocks are also more largely developed here than in any other part of Crete, in consequence of their indurated character. Interstratified with them are masses of grey limestone, and sometimes conglomerates, of the same age, as well as a mass of gypsum near Cape Krio; they are, apparently, all upper members of the hippurite series, and dip to the west and north-west at various inclinations, although never at such as to indicate proximate volcanic protrusions.

The ridges and valleys are consequently, as in all such strata, very narrow and numerous, and can only be cultivated where populous, and where great industry has from necessity closely terraced their sides to support the soil yielded by the decomposition of these strata; and as the population is thin over this district at present, a thick brushwood grows upon these ridges everywhere except where checked by the

shepherds' fires, that successively clear the ground of them, that young and tender herbage may spring for the flocks. Water is also more abundant in these valleys in general than in the valleys separating the great mountain-ranges composed exclusively of pure limestone.

Leaving Irene, then, on our return to the Khania district, we cross by the pass or gap above it, at the head of the valley, towards Sivrano, thence through the deserted lands of the ruined village of Petra, about midway between them. At Sivrano we find a small grove of fine chestnut-trees, about fifty in all, which grow upon a little oasis at the fork of a narrow valley descending to the northward; and we see near it the remains of a fountain and villa, the style of which indicates it to have been the residence of some wealthy Venetian proprietor. The day being excessively hot, we gladly pitch our tent beneath the grove, and enjoy too the luxury of its shade, as well as the delightful contrast and change from the universal sombre olive to the fresh foliage of this fine and wide-spreading tree, the enjoyment being no doubt heightened by its being one of the trees of our own favoured isle, and seldom met with here. The grove was no doubt planted by the Venetian proprietor of the now ruined villa.

We have as our travelling companion a Sfakian pedlar and packman, who joined us near Irene, and

who is on his way to a bazaar or market, which is held every Friday at an adjacent spot called Voukolies, situated at the mouth of the Sivrano valley, evidently chosen for its convenient or central position between the Selinon, Kissamos, and Kydonia districts. As it is to be held tomorrow, I hope to be there to see the gathering from these districts, and the articles they bring for sale, since our fellow traveller reckons the assembly at an average of 2000 Cretans on each bazaar-day. It is the only thing of the kind in the whole of Crete, no such bazaar or great market being held in the interior of the island in any other district.

Before reaching it, however, there were some observations to be made from the summits of the adjacent ridges. Early on the following morning, therefore, we started, and very reluctantly quitted the charming little chestnut-grove under which we had tented, and proceeded along the eastern of the two ridges confining the Sivrano valley.

The day became very hot as it advanced, with the atmosphere also as still as death; so that the heat at noon was excessive, and seemed to draw forth from their hiding-places and nests swarms of insects of all kinds, but especially a sort of flying ants, which gathered thickly around us, and appeared in clouds upon every brow, and over every conspicuous object, tree, and bush upon it. It seemed as if the whole

insect-world had instantaneously sprung into life under the intensity of the heat we were so suddenly experiencing; and as not a breath of air moved to stir a leaf, or disturb them, they alternately settled or rose in dancing columns of life around or upon our heads and faces whenever we were sufficiently still to allow of it.

The mules, as well as ourselves, were so tormented by them that to continue our stay and observations became almost impossible; for they covered our features, and darkened the field-glass of our instruments whenever they were kept stationary to obtain the measurements required. Every ridge, far and near, appeared to have its moving myriads of these insects, which at a little distance, from their density, resembled rising jets of smoke from some hidden hamlet or scattered fires behind the ridges, as they clustered together to settle, or dispersed in playful vaultings in the air again. We at length could no longer bear either their tormentings or the sun's scorching rays; and so we pressed on in the direction of Voukolies, and, after a little descent from the brow of the ridge, we were glad to find both shade and freedom from the insects under some fir trees that we chanced to fall in with; for we happily found that they kept stationary over the crest of the ridge, and did not descend to the shelter we had reached on the hill-side below.

This delay preventing our being able to reach Vou-

kolies during the bazaar, we passed it towards evening, and pitched our tent at sunset above the small village of Dere, to the eastward of the place of the bazaar.

The intense heat of this day, however, was retained by the still atmosphere of the night; for we had the temperature no lower than 89° during any part of it, although we were about 500 feet above the adjacent plains and valleys, and also nearly 1000 feet above the sea.

Soon after daylight, therefore, we pressed on for our ship at Suda, hoping to reach it before noon; and, descending into the valley of the Platanos, we unexpectedly experienced an agreeable fall of the temperature to 84°, although the sun had risen high when we reached it, and the day seemed to promise, from the appearance of the sky, to be hotter than the preceding; for it was hazy, foreboding a coming sirocco, although there was as yet little or no wind. And soon the foreboding proved true; for not long after quitting Alikianu and the shade of its luxurious orange-gardens for the open plain intervening between it and Khania, there sprung up from the south-east a wind that for its heat was like the blast of a furnace, and obliged us to hasten to gain the first shade afforded by the olive-grove we were then approaching, at the commencement of the Khania plain; and even in the most shady part of this, our thermometer stood at 101°; but in an adjoining

coffee-house, to which we ultimately retreated, we kept it down to 91°, by sprinkling the room and keeping all doors and windows closed till the evening had approached, when we were enabled to proceed on our journey. This was the hottest day I had ever experienced in the Mediterranean. The inhabitants also said that so great a heat had not been felt by them for many years.

CHAPTER XVI.

JOURNEY IN SEARCH OF PERGAMUS—THE PLATANOS RIVER AND PLANE-TREE GROVE NEAR IT—LUTRAKI—THE LATE MR. AGNEW—GRAVELS AND BOULDERS—KHANIA BAY—ROCK OF THEODORO—MONASTERY OF GONIA—STALAGMITIC CAVERN—RECENT ELEVATION OF THE COAST—CAPE SPADA—TEMPLE OF DICTYNNA—BAY OF MAGNES—WORSHIP OF THE HUNTRESS GODDESS IN ANCIENT SEATS OF COMMERCE.

THE north-western part of Crete having been partially dwelt upon in the volumes of Pococke and Pashley, a brief notice of my journey over it in search of Pergamus, and to the sites of Rhokka, Polyrrhenia, and Phalasarna, will suffice to convey the additional matter of interest which I obtained regarding them, or regarding the ancient geography of the district.

Pergamus, a city of Crete, founded by Æneas and the Trojans, or by Agamemnon according to Cramer's showing (vol. iii. p. 382), was near Cydonia; and Plutarch states that Lycurgus was interred there.

Pashley has shown that there were no ancient remains at the village of Ierani, or Gerani, near the mouth of the river Platanos, to identify it there, as some have supposed; but Pergamus, having been a place of importance in the early history of Crete, I hoped to be more successful in my search for it.

I have before noticed that the Platanos river must be the Iardanos; and it is the largest rivulet in the west of Crete, partaking both the character of a great torrent and of a little brook, meandering over a wide gravelly bed. It is now noted for the fine grove of large and beautiful plane trees growing upon its banks, for the luxuriance of the greensward and summer shade beneath them, and for the variety of its foliage, the elm and oak being combined with the plane and wild vine, which, as a gigantic creeper, entwines the tall trees to their very tops, its pendent tendrils hanging from their branches in graceful festoons, together with leaves and bright red grapes in autumn.

My route from the ruined bridge at the mouth of the Platanos was first to Lutraki, the country residence of the late Mr. Agnew, an Englishman who, having married a Cretan slave he had seen and liberated at Alexandria, had partially educated her, and then settled in the island as a retired and wealthy merchant; and it was at Lutraki that I first heard of, and first saw, through my visit to him, the specimen of the evergreen plane-tree of Crete I have before noticed when describing Gortyna. The tree was said to degenerate when planted elsewhere in the island; but the fact of its present existence at Lutraki contradicts this statement of Pliny.

Lutraki has, since the recent death of Mr. Agnew,

passed by purchase into the hands of a Mussulman native. For by the ingratitude of the family of his Cretan wife, their litigation and false claims upon his Cretan property and purse after her death, although he had been to them a benefactor, his latter days were so annoyed that he withdrew from all communication with them, and lived in retirement, a martyr to misplaced Philhellenic sympathy and confidence.

From Lutraki I proceeded by the inland instead of by the usual coast road, and across the long, low ridges that lie a mile or two from the shore, through the villages of Kavolomuri and Damaliana, around each of which were large olive-groves, wherein the nightingale's song warbled loudly as we passed through them, and is incessant during the summer season. Beds of red sandy marls and gravels cap the whole of these ridges, overlying the usual white tertiary strata of miocene age. The gravels contain large schistose boulders, from three to four feet and more in diameter in some places, and thus indicate the existence of some unusually powerful water-action, or probably of ice-transport, at some later tertiary period; for the source whence these boulders come are the shaly and schistose ridges lying fully three or four miles to the south of their present position; and there are remnants of the same red earthy gravels on the ridges in other parts of this

district. They must be subsequent to, and not connected with the Levant freshwater-lake period; for what appeared to be another remnant of this lake was found, in no association with these gravels, in a small patch of freshwater marl near the shore, westward of Lutraki, in which were impressions of freshwater fossils.

Although the neighbourhood seemed, from its present fertility and numerous villages, to have been favourable for the site of an ancient city, such as that of the Pergamus I was in search of, I could hear of no vestiges, save a tomb or the traces of some solitary habitation or villa.

These villages are all in the eparkhia of Kissamos, although separated from the bay of Kissamo by the neck of the ridge of mountains stretching out into the promontory of Cape Spada, the ancient Tityrus. This promontory was noted for its forest, as also for the city and temple of Dictynna, near its extremity; and, according to Strabo, Dictynna was founded there by the Samian refugees who founded Cydonia.

The ruins of this city and temple were first described by Dr. Pococke, and, for the convenience of the reader, I shall here notice the promontory and its interesting features before proceeding to Kissamo.

The wide bay of Khania embraced by the two elevated headlands of the Akrotiri and Spada, and backed by the White Mountains, is probably the most

picturesque view anywhere seen of Crete from the sea. The high rock or island of Theodoro stands near its centre, at nearly a mile from the shore, and upon it are the remains of two Venetian forts that formerly protected the anchorage there.

The Turks early took it from its small garrison of Venetian soldiers, whose commander at the time immortalized himself and his brave band by all sacrificing themselves in its defence rather than surrender.

At the south-west corner of the bay is the Monastery of Gonia, with its whitewashed church and dome, very conspicuous as you sail up towards Khania, being situated just above the shore.

Pashley has described, and given a drawing of, the monastery in his volumes; it is, however, very small and of modern erection, possessing no special interest except as being a location for an occasional political priestly emissary from Athens to agitate the Sfakiots and embarrass the local authorities, in pursuit of the future hopes of "Young Greece."

Near the monastery is a small cavern, which (on a subsequent visit to Khania) the priests took me to see, as a local curiosity. The cavern, which has two apertures, extends for about forty or fifty yards only, forming a natural tunnel through a projecting limestone cliff that stands about 100 feet above the shore; but I found it of more interest than the good priest

had supposed, from parts of its floor containing traces of a stalagmitic bone-breccia, as also the surface of the rocks some yards distant from the lower and southern entrance—thus showing that the cavern must have greatly diminished since the accumulation of the breccia and its consolidation also upon the steep face of the rocks in front of the cavern.

My friend Dr. Falconer, who has examined the remains, has been able at present to identify only those of a goat, a roebuck or stag, and of a small *Myoxus*, from the very few teeth found in the small portion broken up by me. I afterwards found another bone-cavern between Suda Bay and Khania, but of much smaller dimensions, and with much fewer remains in its stalagmite floor, the details of which will in due time be given by him.

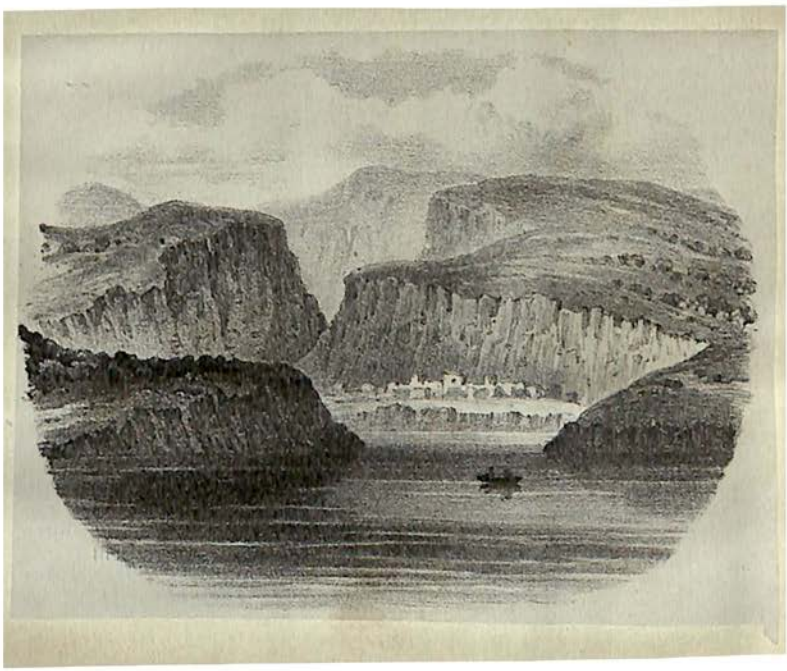
In examining the low shore extending from the angle of the bay under Gonia, I observed evidences of a considerable retirement of the sea there, which I found to be due to the recent upheaval (before referred to) which has affected the whole of the western part of Crete; and I found that the uplift increased as I advanced westward, being 9 feet at Theodoro Island and about 11 feet here. This retirement has caused a gain of dry land, of from 500 to 600 yards in breadth, along a great part of the low shore between the monastery and Khania, as its old margin is fully indicated by several sea-worn caverns and

pinnacled rocks that exist at the angle of the bay; and although the natives have lost all record of the time, yet they pointed out some of the rocks, of a mushroom-shape and evidently sea-worn, as the bollards to which the ships of ancient times used to be attached; so that a faint glimpse exists amongst them of a tradition that the retirement of the sea has occurred since the beginning of history—the only indication of such a tradition that I could discover in the island; yet it did not amount to a knowledge of its having resulted from an elevation of the island since the historical period, as is the fact, but only that the ships of the old time used to make fast to these natural but suggestive rocks in consequence of their peculiar shape.

The promontory of Spada is mountainous and picturesquely wild, especially towards its extremity, from its elevation there, and from the several cliffy gorges and ravines descending to the coast from its summit, which is 2500 feet above the sea, although the average breadth of the promontory is only two miles and a half.

The most northern and most picturesque of these gorges is near its north-east extreme, where the valley opens to the sea at a small cove well sheltered from the north. It is on the little plain at the mouth of this cove, and of the two deep valleys or gorges that open into it, that the ancient town of Dictynna was

situated. A sketch of the whole is given here to show its character, which seems to me to be a beautiful illustration of how a rent made in rocks at the upheaval of a promontory may have subsequently become enlarged by the action of the atmosphere and the torrents that have since run through it.



The temple of Britomartis at Dictynna, for which it was celebrated, stood, however, upon the level plateau over the south point of the bay (on the left side of the view), where there are still several square blocks of marble lying upon the platform that supported it. A large pedestal, three feet square, and

ornamented with festoons and figures, is also adjacent to it, but too much mutilated and weatherworn now to judge of its merit as a work of art. Pococke speaks of it, however, as being finely executed, and as having the hind parts of the figure of Pan upon it; but, from a careful examination of what remains, I should judge them to be only the limbs of some wild animals, since there are more than one pair, as such were the appropriate emblems to place upon the pedestal of a statue to the huntress Dictynna, who was worshipped here. Pococke also mentions that a statue of the goddess in Parian marble had been discovered previously to his visit, and destroyed, but that he obtained the sandalled foot, which was exquisitely wrought.

The platform is about 110 yards long and 70 broad, and might yield some interesting relic of the temple, if cleared of the rubbish and soil that appear to cover parts of it; but the temple having been resorted to as the quarry to supply a lime-kiln that was some time since erected near it, much of its remains, then lying upon the surface, has been destroyed in this barbarous use of them. Adjacent to it is a cistern, 70 feet long, 30 broad, and 20 deep, divided into four compartments, and indicating, by its size, the repute in which the temple was locally held, from the necessity of having so large a water-supply near for the multitudes that resorted to it.

The remains of the city lie for the most part in the bed of the gorge below the temple, and seem to be nearly all of late Roman date, having been built of mortar and small stones, and in some places supported with brick arches: many were habitations. Some are large and circular, as if they had been churches and baths; others appear to have been monasteries during a still later period, and, from their state of preservation, appear as if the place had been suddenly abandoned, for the walls of many of them are several feet high. It thus seems to have preserved its sanctity after the introduction of Christianity, and the devotion to Dictynna to have been transferred, at the conversion of the priesthood, to St. George, who is now the local tutelary saint.

Its situation exposing it to the piracy of the middle ages was, no doubt, the cause of its later desolation or desertion; for it possessed no wall of defence, and lies completely under command of its surrounding precipices. The bay is called Cantzielieres or Magnes; and there is a small metoki or farm near a ruined church dedicated to the Agios Giorgios Magnes, upon a cultivable plateau about two miles west of the city, whence the modern Greek name has been derived. The peasantry at the farm inform me that vestiges of an ancient road may be here and there traced along the whole of the upper part of the promontory, which must doubtless have been the sacred way to the

temple at the city below; for the remains of a broad terraced roadway still leads down the side of the gorge to it from this plateau.

Independently, therefore, of the ancient notices of this temple, these evidences, and especially the existence of so large a city amidst so barren a territory and so difficult of approach, show that it must have had considerable local celebrity.

Dictynna, Britomartis, Diana, and Artemis are sometimes used synonymously for the goddess of hunting by the ancients of different localities; whilst according to some authors Britomartis and Dictynna were considered to be only the companions or *protégées* of Artemis or Diana. An ancient Cretan tradition, noticed by several authors, states that Dictynna was a surname applied to Britomartis in the island because, it is said, when she threw herself into the sea here, to escape the pursuit of its deified king Minos, she was rescued by the net of a fisherman (the name signifying "of the net"); and the bold cliffy coast enclosing the cove, and the blue depth of the deep sea close off it, doubtless favoured the invention of the legend of her leap and the mode of her escape from drowning.

Thus the Sirens' plunge, Sappho's leap, and the Cretan Diana or Dictynna's dive were all naturally suggested by localities favourable to the production of a myth or legend in the minds of men of early times, when the fascinating fictions of poetic and philosophic

minds, and the inventions of human superstition, were largely mingled with natural religion, instead of being superseded, as now, by divine revelation and precept.

But this notice of the celebrity of the worship of Dictynna in Crete at a late time leads one to reflect upon the remarkable and apparently inconsistent enthusiasm of devotion to the goddess of hunting in places of great populousness and times of advanced civilization—as at Ephesus when the multitude shouted so tumultuously for the space of two hours, "Great is Diana! great is Diana!" and shown here too, by the rising up of a fine city adjacent to the shrine of her Cretan representative.

In the early and rude ages, when hunting was mostly rather a means of livelihood than mere sport, the general worship of a deity supposed to preside over success and safety in the chase was a natural suggestion of polytheism in its primitive conceptions, under a sense of the necessity of having something more than the hunter's own skill and prowess to meet, with such rude weapons as he then possessed, the cunning and wild ferocity of the animals of the forest and the desert.

But that she should have become the popular deity of a great city of commerce and handicraft, like Ephesus, and have been "worshipped by all Asia and the world," seems to indicate a degeneracy from the

primitive mythology and religion of the old Greeks, since the choice of her as the popular deity of a city seems repugnant to the attributes with which, as a goddess of the chase, the poetic philosophy of the older polytheism had endowed her.

The increased enthusiasm for this goddess in the later days of paganism thus shows a decline from the loftier aspirations and nobler, if not purer, worship of the greater deities (Jupiter &c.) of the heroic ages. For, at Ephesus at the time referred to, this enthusiasm was confined chiefly to the mass, the educated and more enlightened classes being unaffected by it, as appears from the manner in which St. Paul was protected by "certain of the chief of Asia, which were his friends," and from the tumult having been also easily appeased by the reasoning of the town authority.

All these things were signs that the time was ripe for the great change in religious thought and feeling which shortly followed. And as the orthodox Protestant preacher sees a somewhat parallel decline from primitive Christianity at the present day, in the enthusiastic adoration of a deified Lady amongst the mass of a large branch of the Christian community, he may view it also as a remarkable coincidence in the signs of the times—as an indication of a coming change in the condition and tenets of the different communities of Christendom, coupled as it is with

the more significant symptoms of increasing tolerance, charity, and respect between different denominations for each other's religious opinions, caused by the advancing enlightenment, freedom, and civilization that are spreading among nations, guiding the policies of their kings and emperors, and, it is to be hoped, are tending to bring about more unity and accord in the common creed.

CHAPTER XVII.

VALLEY OF KAMARA — RUINS AT AGIA IRENE — THE PROBABLE SITE OF PERGAMUS — PROCEED TO RHOKKA — ITS SITE AND RUINS DESCRIBED — FIND NO TRACE OF THE TEMPLE OF ARTEMIS THERE — THE SITE DISCOVERED AT TRIA HALONIA, ABOUT A MILE TO THE SOUTH — THE VESTIGES EXISTING THERE—NATIVE REPORT OF THE TREASURES THAT HAVE BEEN FOUND UPON THE SITE — PROCEED TO POLYRRHENIA — DESCRIPTION OF THE SITE AND RUINS—ITS COINS.

At the root of the Dictynnian promontory are two cultivated valleys, one of which opens on to the shore close to the Monastery of Gonia, and then turns northward to the centre of the promontory; the other opens about a mile south of the monastery, and runs in the opposite direction. I was informed that in the latter were some ancient remains, near a village called Kamara. I was induced, therefore, to proceed to it in the hopes of finding here sufficient to identify it as the position of Pergamus; since, according to Scylax, it was both near Cydonia and Dictynna, and therefore somewhere between them, as this valley is.

I found, however, on reaching the spot, that the ancient vestiges spoken of were upon a naturally terraced and cultivated ridge below Kamara, in the centre of the valley, where there was a hamlet and church called

Agia Irene, belonging to the large village of Nokia, westward of it, the inhabitants of which village have a tradition that an Hellenic city of some importance stood here. The only remains I could see to indicate it as an ancient site were those of about 100 feet of a very massive Hellenic wall, supporting a natural terrace, in the middle of the vineyards with which the ridge is partially covered; but the natives report that wherever they dig on this ridge they find walls or tombs buried beneath the soil; some fragments of ancient terra-cotta figures and bottles were also shown to me that had been found in one of the tombs recently opened. But neither from its local name nor from the extent of the visible remains can I do more than conjecture the probability that it was either Pergamus or Achaia, two cities or places in this part of the island, the positions of which are wanting. The latter of the two was noted for its fine breed of stags; and as the Dictynna promontory has been noted also for its forests, as well as being dedicated to the goddess of hunting, these facts give a presumption in favour of the latter, if it really was the name of a city, instead of a district in which those stags abounded. Pergamus, therefore, may have been upon the hill over Pyrgos, to the south-west of Khania, where Pococke supposed Cydonia to have stood, and which, until very recently, belonged to the monastery upon Mount Sinai; and as I can conjecture no other position

in this district at all likely, and wholly reject Pococke's view of its having been Cydonia, I leave the point open still to the consideration of the archæologist and traveller: but I lean strongly to the idea that Pergamus was at Agia Irene near Gonia, and that the name of Achaia applied only to the forest that covered the mountains in its neighbourhood. The identification of the remains of a roebuck in the bone-cave at Gonia by Dr. Falconer seems to indicate, too, that in these we probably have the relics of the stag for which Achaia was noted. Thus the Achaian stag, the fine forest of the promontory, and the haunts of the goddess of hunting are all aptly and singularly associated by the additional and interesting fact connected with the bone-cave; and that Agia Irene is the site of Pergamus, the burial-place of Lycurgus, seems a fair and probable inference likewise.

Nokia is a large village on the neck of the promontory of Spada, where its elevation is reduced to a little over 1000 feet above the sea, or 1500 feet less than the peaks in the centre of this high and bold promontory. The main road between Kissamo and Khania passes through it. Making but a brief stay there in my journey westward, I leave it for the ancient Rhokka, noticed first by Pococke in his journey over this part also. "The conical rock, for which it is remarkable, soon came in sight over the west side of a narrow cliffy gorge, through which

flows the streamlet Tiphlose; and at the same time we sighted the head of Kissamo Bay and the ancient port of Kissamo at its western extreme; so I halted a moment to enjoy the view.

Rhokka was visited by Dr. Pococke, but not by Pashley; and it appears from them that it was mentioned by Ælian as a place with a temple to Artemis. Thus the goddess of the chase seems to have been the presiding deity of every part of this mountainous and once wooded district of Crete.

Descending by a steep road to the hamlet of Mesonisi, situated in the bottom of the gorge, close under the peak of Rhokka, I halted there to sketch its picturesque appearance. A zigzag path amidst ivied crags ascends to it from Mesonisi; and as soon as we near the top of the broad plateau lying on the west side of the sugar-loaf peak, we see some indications of ancient terraces and walls, then a copious spring, and next an old chapel, called Agios Apostolos, upon the edge of the plateau, from over the door of which I copied the singular inscription, No. 13, Plate II.

The conical peak of Rhokka rises about 250 or 300 feet above this plateau, crowned by the remains of two large built-up cisterns and by a third sunk in the rock; but there are no walls or buildings upon it, the summit being not more than sixty yards long and twenty broad, and accessible only by a flight of steps cut in or built up the south face of the peak.

This natural acropolis is separated from a long ridge of limestone lying to the south of it by a hollow or gap, in which I pitched my tent, near an old well—upon one of the ancient terraces of the old city, as I found from the chief remains of it lying there. And on the edge of the gap, immediately above the gorge of Tiphlose, to the eastward, I saw some remains of another flight of steps that led down towards the river, to some rock tombs in the face of the gorge, there being five or six where the steps ended.

The remains above-mentioned consist of old terraces with shattered marble fragments upon them, and the foundations of several buildings. Some of the earlier habitations were built against the steep base of the high rock, the surface of which was cut down smoothly to form the back of the buildings; and the niches that were cut in its face, to serve as cupboards or to receive the rafters of the roof, still remain: there are some fifteen or twenty of these evidences of dwellings having formerly existed where hardly a fragment now remains of the built part of them. The rock is a limestone conglomerate, and a member of the upper schistose and nummulite group of strata. One of the old excavated recesses is now used as a church, and dedicated to St. Antonio. I did not, however, observe any columns or other remains upon the site to point out the probable position of the temple of Artemis of Rhokka at the city itself, as

mentioned by Ælian, and therefore was induced to search for it in the neighbourhood, as I shall presently show.

The natives brought me several Roman and Venetian copper coins, and also, in answer to my inquiry whether any had been found, about twenty silver medals of the Roman families, which were said to be the remnant of a jarful comprising several hundred similar, discovered a few years previously and sent chiefly to Smyrna. Three or four good gems were also shown me, upon one of which was a well-cut Pegasus; but the value at which they were estimated by the possessors and amongst the natives almost exceeded that of the ring of Polycrates, and prevented the possibility of my purchasing them.

Finding no remains of the temple of Artemis here, and hearing, from the natives, of some apparently important remains at a place called Tria Halonia, or the Three Threshing-floors, about a mile south of Rhokka, at the extremity of the long limestone ridge above mentioned, I obtained a guide from the village and proceeded thither.

So much was said of this Hellenic site by the natives of Rhokka, and it was so much more appreciated as a place of early antiquity than their own spot, that I was in great expectation of finding considerable remains of either another city or the Rhokkæan temple of Artemis. I was consequently the more disap-

pointed at finding only some few vestiges of Hellenic walls or faces of terraces, some scattered marble blocks, and six or eight rock tombs *in situ*; but a native whom I found working there took me to a level and apparently terraced corn-field just above these tombs, and assured me that it was all floored beneath the surface soil with large square blocks of black marble.

This description reminded me, immediately, that at Malia, near Khersoneso, in the eastern part of Crete, where Britomartis, the sister huntress, was said to have been worshipped, there was recently found a similar platform, having also no building or vestige of a building upon it. It is probable, therefore, that in both these places the statues or shrines of the hardy goddess, or of these goddesses, were without an enclosed building, and stood in the open air. And I think that this was truly the site of the temple referred to as that of the Rhokkæan Artemis by Ælian (quoted by Pashley, vol. ii. p. 40). For as it was called after the city Rhokka, this is more likely to be its situation than Nopea, near the shore at the mouth of the Tiphlose, where Pashley supposes it to have been, but where also he places the ancient city or hamlet Methymna, on good evidence, from some vestiges of a small coast-town being visible there—since Methymna could hardly contain the Rhokkæan temple, being so far from and so much below the city of Rhokka.

The inhabitants have numerous stories of the gold and other treasures which have been at various times found among these vestiges south of Rhokka; and I was shown a spot, on a little projection below the field with the platform at the Tria-Halonia site, where there had been recent excavations, and where, I was told, a small marble statue had been found by the proprietor of the field, a native of the village of Armeni. It was also said that a small gold figure had not long since been found in an adjoining field by its proprietor, a relative, who entrusted the figure to him to dispose of at Khania; but as he never would render an account of the proceeds, denying the fact, the finder and rightful owner accused him of the theft before the authorities at Khania, and he was imprisoned for two months. All these discoveries and traditions show that it was undoubtedly a spot of more than common interest; and as, apparently, it was not the site of a town, it could only be that of a place of sanctity, such as a temple or the shrine of some deity. I therefore believe this to to be the true site of the Rhokkæan Artemis's temple, in opposition to Pashley's adoption of Methymna for it.

I proceeded straight to Palaio Kastron (the ancient Polyrrhenia) from the Tria Halonia, passing through the village of Armeni and then crossing three deep valleys and two steep ridges before reaching the ridge overlooking the site of the city—the ravines all beau-

tifully overgrown with the olive, plane, and myrtle. The eastern of these ridges are composed of white tertiary marls, which present fine sections of their deposits in the ravines; but the western and most elevated ridge, which we crossed just before sighting Polyrrhenia, is composed of brittle shales with occasional masses of limestone apparently belonging to the nummulite series; thence we abruptly descend into the narrow and deep valley that passes close beneath the acropolis of Polyrrhenia

Polyrrhenia stood upon an isolated and uplifted peak of this limestone, just above the southern margin of the marine tertiary deposits extending round the head of the bay of Kissamo.

This early Cretan city thus occupied a very commanding and well-chosen position, its south and east sides rising very steep from the gorge or valley passing below it. The summit of the city was enclosed by walls and towers, some parts of which are in good preservation still, but appear to be chiefly of a late Roman or middle-age date; yet they contain many traces and fragments of the earlier Hellenic walls, as fine specimens of both the Cyclopean and Hellenic styles occur on the west side of the acropolis, forming the basements of the more modern defences. The summit or part enclosed as the acropolis was in the form of the letter T, having three distinct spurs or arms: within it are several large

M & N Hanhart imp.

J. Schranz, del. from a sketch by T. A. B. S.

PALAIO KASTRON ANC^T POLYRHENIA.

cisterns, besides ruins of churches and habitations; so that it seems to have been, at the early Christian time or during the middle ages, the only inhabited part of the city.

The accompanying view of the city, from the road ascending to it from the bay of Kissamo, will convey an idea of its very picturesque and commanding situation, and will help to render comprehensible a brief description of it.

Polyrrhenia was apparently only a small city in the very early Cretan times, Cydonia being the capital of the western part in the time of Minos; but receiving colonies from the southern and adjacent part of the Peloponnesus at a subsequent period, it became a considerable city, having its seaport, according to Strabo, at Phalasarna, on the west coast, sixty stadia distant, although it was less than half that distance from the nearest point of the bay and port of Kissamo. Polyrrhenia, however, became one of the most important republics of Crete after this increase of its population by the Lacedæmonian and Achæan colonies, as is indicated by its coins, which are comparatively numerous. They are of various types; but the figure on most of them is a spearhead and shield, with sometimes the first letters of the name, ΠΟΛΥ, and sometimes the name in full, but with one Ρ only.

The name now applied to the site, Palaio Kastron, is also the name of the two villages or hamlets that

are situated at its north and south extremes. The southern village occupies a narrow ledge on the southern and steep face of the hill, where it descends in a series of terraces seldom more than a few yards wide, in part artificial, and partly natural, upon which lie scattered many vestiges of the old city. But the exterior walls that originally extended down this side have disappeared, their fragments having become buried under the soil accumulated upon the terraces, or rolled into the bed of the gorge beneath, where I observed several blocks and ancient fragments lying by the side of or within its torrent-bed, upon one of which was the inscription of two lines, No. 15, Plate II. of Inscriptions.

A little to the west of the village is a high tower, near a spring of water issuing from an artificial tunnel in the mountain, which appears to have been a part of the walls of the city during the Roman time, and probably indicates the site of an entrance or gateway: but at the spring itself there was lying a chastely carved fragment of a pediment, or cornice, in white Parian marble, that evidently belonged to some temple or monument which probably stood near; it seemed to be of an earlier and purer style than the Roman.

On a spur of the hill just over it is a fine piece of Hellenic facing to a platform that supported several large buildings. One of them had the name of Hadrian inscribed in large letters upon a long block of sand-

stone. On another part of the same platform was a block of grey limestone, with another fragment of an inscription upon it (No. 14, Plate II. of Inscriptions). And at the village I found an elegant stele or tombstone (with an inscription to a native of Gortyna), represented in the engraving, the shape of which will remind the reader of many of those in our own churchyards.

The necropolis of the city whence it came, however, was upon a plateau at the northern spur of the hill, and just over the other hamlet, or Kato Palaio Kastron, whence I procured two small and thin gold coins, which had been found in a tomb opened a little time previously by one of the peasantry when tilling the land. They are of very early date, judging from their type and remarkable thinness. A third was procured by me subsequently; and if struck for this city also, as seems probable, they are the only known gold Cretan coins; and they are all of different types, but all having a bird with half-extended wings, like a pigeon or dove, upon one side, and a fly or bee, or an urn, or a rude indented star on the reverse.

CHAPTER XVIII.

BAY OF KISSAMO—SITE OF KISAMON—VENETIAN CASTLE—REMAINS OF THE OLD CITY—ITS ANCIENT PORT—ELEVATION OF THE SHORE—POPULATION, ETC., OF THE KISSAMOS DISTRICT—ITS GEOLOGY—BUSA PROMONTORY—CORYCUS—THE ANCIENT CORYCÆ—VENETIAN STRONGHOLD OF GRABUSA—LITHGOW'S "JOURNEYINGS OF PERIL"—FORTRESS OF KARABUSA DURING AND SINCE THE REVOLUTION.

THE acropolis of Polyrrhenia commands a fine view over the bay of Kissamo, and also over the ancient site of the city and port from which that bay or gulf takes its name; but its own seaport of Phalasarna is entirely hid from sight at the acropolis by the ridge of Mesoghia to the westward, which extends also into the long and precipitous promontory of Cape Busa from the two villages of Mesoghia, that are situated to the west of Polyrrhenia and above the coast of Phalasarna.

Kisamon, another considerable city in this part of Crete, is identified by the name attached to the site and ruins at the modern castle of Kissamo, situated near the shore of the bay—a name which settles the controversy that once existed amongst authors regarding the true position of the Cretan Kisamon. For by Strabo assigning a Kisamon to Aptera as its port, Pococke and Tournefort were led to mistake Polyr-

rhenia for Aptera, through finding the name existing at the ancient site and port in this bay so near Polyrrhenia, which is so clearly identified at Palaio Kastron by its numerous coins found there, and by its proximity to the western extreme of Crete; and I have already shown that Pashley had long since discovered both the true position of Aptera and of Polyrrhenia. But there may have been two places of the name of Kisamon in Crete, although the only one of importance as a city and port must have been the Kisamon in front of Polyrrhenia, as is shown by its remains and magnificent mole; for no such vestiges and indications exist at or near Aptera. Strabo, therefore, may have been mistaken in respect to its position, or the error may have been committed by one of the transcribers of his works.

Kissamo consists of a small and now dilapidated old castle of the Venetians, which was built upon a little rising ground a few hundred yards from the shore of the bay, but which was subsequently enlarged by the Turks, to enclose the few Mahomedan habitations belonging to it. There is a small village for the Greeks outside the fort; and a few shops, as a bazaar, are attached to it, for the supply of the fortress and of the eparkhia of Kissamos, of which it is the miserable capital. The castle was built in 1554, and surrendered to the Turks in 1647, the garrison having been reduced by pestilence to seventy souls only.

The remains of the old city of Kisamon lie to the south and west of the modern village and fort, and appear for the most part to be of Roman date, from the quantity of brick and tile used in their construction; but some foundations of walls are also seen, ascending the foot of the neighbouring hills, that seem to be of an earlier date. The chief part of the city, however, stood upon the plain between the foot of these ridges and the castle.

Kissamo was the twelfth bishopric of Crete during the early Christian period; and this shows that it was an important city at that time. Its ancient port is its most remarkable and interesting feature at present, being nearly dry, and having the old massive mole of large rude blocks of limestone, that, jutting out into the sea from the western shore of a small bay, protected it from the north, now almost entirely out of the sea, having been elevated about 18 feet by the subsequent uplift of this part of the island, which I have before noticed and have traced thus far from Suda Bay. The consequence here also is a considerable advance of the shore-line all round the head of the bay, as at Gonia; and both in front of the fort and for a long distance eastward of it the shore has gained more than a quarter of a mile in breadth, while the castle itself stands upon a plateau the edge of which was evidently a shore-cliff when the port was originally constructed.

The Kissamos district is greatly increasing in fertility and population, much beyond every other part of Crete, from receiving occasional emigrants from Cerigo, on account of its proximity to that overpopulous island. It produces an excellent wine; but, like nearly all the Levant wines, the manufacture of it requires the management and skill of European hands to suit European tastes and markets; the Cretans, however, never put resin in their wine, and seldom gypsum, which is done in other parts of the Levant, but dip myrtle- and orange-leaves into it during fermentation, to give it flavour and odour.

This part of Crete was from very early times in trading connexion or alliance with the proximate part of the Peloponnesus, and it was thence and through these western cities that the Doric element (which exercised such an influence throughout its several republics) was introduced into Crete, after the fall of the Minos dynasty and the depopulation of the old cities by intestine war and pestilence.

Near Kissamo there is a gypseous deposit deserving special notice, from the great quantity of a small fossil fish, like a sprat, that it contains, and that seem, from their numbers in such close proximity, to have been suddenly enclosed. The deposit appears to be a member of the marine tertiary of the miocene period; but its exact age and origin I could not rightly determine, there being no other fossils, and

the gypsum cropping out only at the end of a ridge, and extending but a few yards. The stone is quarried for building-materials, and is even sent to Cerigo for that purpose, as it splits easily into fine slabs. The deposits at the back of it, and near Polyrrhenia, are miocene marine, and contain the same fossils as at Khania. Amongst them are a species of Foraminifera Heterostegina, which is so abundant in the upper strata of the Malta group of deposits, and other shells more characteristic of its age.

Some parts of it, however, are capped by sands and gravels, or flanked by parallel lines of schistose boulders not strikingly large, as upon ancient terraces or former levels of the valleys, and at an elevation of only 200 or 300 feet above the sea; but the origin of these, as well as of the boulder-sands and gravels that lie upon the lower ridges in the western part of the Khania district and elsewhere, requires special research to determine.

The wild and precipitous promontory of Busa stretches out from the west side of Kissamo Bay towards the isle of Cerigo and the Morea, as an arm parallel to its opposite headland of Spada, which, with the gradually retiring ridges that ascend from the coast, and encircle the head of the deep gulf or bay of Kissamo, gives rise to the idea, on entering it from the sea, of sailing up a gigantic stadium. Upon the theatre-like semicircle of hills rising from its

extremity stood the four cities I have noticed, Methymna, Rhokka, Polyrrhenia, and Kisamon.

Its western arm, Cape Busa, was the ancient Corycus, upon the summit of which it would seem, from his work, that Buondelmonte, the Florentine traveller, saw some remains of a city; but I think he must have seen and is really describing Rhokka and its remains, and not those of any city upon this promontory; for none answering to the description and place could I hear of as existing upon it, and there is no certain evidence of there having been a town named Corycus there in ancient times, beyond the mention of a Corycus by Ptolemy.

The 'Stadiasmus' places a port called Agneion five miles from the cape, where there was also a temple to Apollo. This port I recognize to be the little sheltered bay of Agios Sostis, where coasters come and secure to the shore when seeking refuge against the strong meltems and westerly gales, and where there is a chapel to the saint of this name in place of the temple, but no other habitation or remains of any significance. The Tritus promontory, of the same author, or the perforated cape, must be Cape Busa itself. Two bold rocky islands and a peninsula lie off its extremity; these were the ancient Corycæ, then three islands, instead of two and a peninsula as now, the latter having become joined to the promontory by the recent upheaval of the coast. The two islands

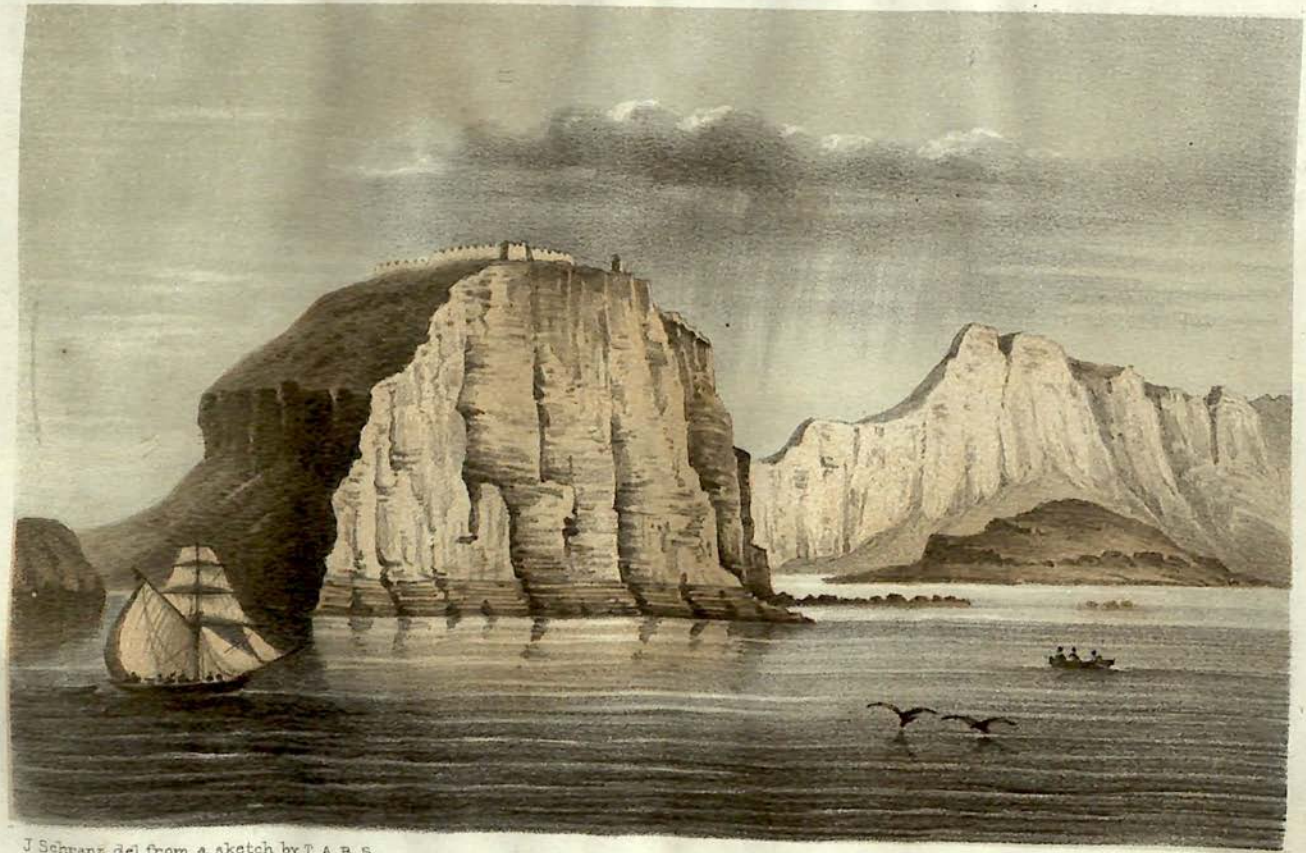
are now known as the Agria Grabusa, lying direct off the cape, and, to the south-west, the famed stronghold of Grabusa, or Karabusa, with an indifferent harbour, of the same name, within the ledge of rock extending from it.

This celebrated fortress was one of the last strongholds retained by the Venetians in the East, who built it upon the rock soon after they became possessed of Crete, to prevent its port continuing to be made, as it then was, the resort and retreat of Moorish corsairs at the very threshold of the archipelago. It is said to have been finally bartered by them to a vizier of the Sultan's for a barrel of sequins (Tournefort, vol. i. p. 62). But they retained Suda and Spinalonga some years after their surrender of Grabusa.

When our enterprising and quaint countryman, Lithgow, commenced his "journeyings of peril" in the Levant, he began them at Crete; and, in spite of the risks and dangers of the undertaking at that time, they were begun actually at the extremity of the wild and forbidding promontory of Corycus, where he landed alone from the fortress of Grabusa, to which he had come from Corfu and Cerigo.

It is therefore from a feeling of respect to the enterprising character of our pioneer countryman that I give his own account of this trip, made about the year 1609 or 1610.

"Now, in respect of my travelling two times through



J Schranz del from a sketch by T.A.B.S.

Hanhart lith

VIEW OF GRABUSA.

the bounds of the whole kingdome, which was neuer before achieued by any traveller in Christendome, I will as briefly as I can in particular relate a few of these miseries indured by me in this land, with the nature and quality of the people.

"This aforesaid Carabusa is the principall fortresse of Creta, being of itself inuincible, and is not unlike to the castle of Dunbertan, which standeth at the mouth of Clyd; upon which riuer the auncient city of Lanerke is situated; for this fort is enuironed by a rocke higher then the wals, and joyneth close with Cape Ermico. Hauing learned of the theeuish way I had to Canea, I aduised to put my mony in exchange, which the captaine of that strength uery curteously performed, and would also haue diswaded me from my purpose, but I by no perswasion of him would stay. From thence departing all alone, scarcely was I aduanced twelue miles in my way, when I was beset on the skirt of a rocky mountaine with three Greeke murdering renegadoes, and an Italian bandido: who, laying hands on me, beate me most cruelly, robbed me of all my clothes, and stripped me naked, threatning me with many grieuous speeches.

"At last the respectiue Italian, perceiuing I was a stranger and could not speake the Cretan tongue, began to aske me in his owne language, where was my money? To whom I soberly answered, I had no more then he saw, which was foure score bagantines;

which scarcely amounted to two groats English. But he, not giuing credit to these words, searched all my clothes and budgeto, yet found nothing except my linnen, and letters of recommendations I had from diuers princes of Christendome, especially the Duke of Venice, whose subjects they were if they had been lawfull subjects, which when he saw did moue him to compassion, and earnestly entreated the other three theeues to grant me mercy, and to saue my life. A long deliberation being ended, they restored backe againe my pilgrime's clothes, and letters; but my blew gowne and bagantines they kept. Such also was their theeuish courtesie toward me, that for my better safegard in the way they gaue me a stamped piece of clay, as a token to shew any of their companions, if I encountered with any of them; for they were about twenty rascalles, of a confederate band that lay in this desart passage.

"Leauing them with many counterfeit thankes, I trauelled that day seuen and thirty miles, and at night attained to the unhappy village of Piekehome, where I could haue neither meate, drinke, lodging, nor any refreshment to my wearied body. These desperate Candiots thronged about me, gazing as though astonished to see me both wante company and their language, and by their cruelle lookes they seemed to be a barbarous and unciuill people; for all these highlanders of Candy are tyrannicall, blood thirsty and

deceitfull. The consideration of which, and the appearance of my death, signed to me secretly by a pittifull woman, made me to shun their uillany in stealing forth from them in the darke night, and priuatly sought for a secure place of repose in a umbragious caue by the sea side, where I lay till morning with a fearefull heart, a crased body, a thirstie stomacke, and a hungry belly.

"Upon the appearance of the next aurora, and when the welkin had put aside the uizard of the night, the starres being couered and the earth discouered by the sunne, I imbraced my unknowne way, and about mid-day came to Canea."

With this extract I take leave of the enterprising traveller, and return to relate something further of the history of the stronghold.

The fortress of Karabusa, or Grabusa, fell into the hands of the patriots of Greece and Crete during the struggle for independence previously to the battle of Navarino; but Marco Buso, a celebrated Sfakian chief, and the uncle of my lamented guide the chieftain Captain Manias, of whom I have spoken as one of its later patriots and pirates, here sacrificed his life on its ramparts in an earlier attempt to surprise the Turkish garrison with a handful of followers.

But the Sfakians and Greeks from the islands, who finally got possession of this stronghold at the

closing period of the war, degenerating into a band of pirates, and possessing several vessels employed in open piracy, were condemned as such by the provisional government of Nauplia under Capo d'Istria; and this nest of corsairs was consequently dispersed, and the fortress taken from them and finally held by some of our squadron till the affairs of the East and of the island of Crete were arranged by the subsequent surrender of it to Mohammed Ali, with the consent of the European powers and the Sultan.

The accompanying is a sketch of Karabusa, or Grabusa, as seen from the sea, with Mount Corycus in the background, and the peninsula which once formed the third island off the coast, directly under the mountain. The reef of rocks, like a mole, extending from the south end of the fortress, is that upon the outside of which the English frigate Cambrian was lost in the year 1829, whilst operating against the pirate shipping within, previously to capturing the stronghold from them. The view has a special interest, from the base of the western cliff of the fortress showing so very distinctly the lines of many successive levels at which the sea has stood during the progress of the recent upheaval: the highest of these is about twenty-two feet above the present sea-level, the fluctuation of which from lunar influences seldom amounts to more than one foot in such open parts of the Mediterranean.

CHAPTER XIX.

DESCRIPTION OF PHALASARNA AND OF ITS ANCIENT PORT — ITS DISCOVERY AMONGST THE RUINS UPON THE PLAIN — THE CAUSE OF ITS REMOVAL FROM THE COAST TRACED TO THE RECENT UPHEAVAL — THE TIME OF THE UPHEAVAL THUS DETERMINED—THE REMAINS OF THE CITY—MONOLITH BEMA.

PHALASARNA, the most western city of Crete, was situated upon a bluff headland of the coast, at about six miles to the south of Grabusa; the modern name of the ruins is Kutri. I give here a view of them from the top of the road descending thither from the shoulder of the Corycus ridge, at the point where it is crossed by a pass which leads to Kissamo and Polyrrhenia—no doubt also the ancient line of road between the latter and its sea-port of Phalasarna.

This view, and the ground-plan of the ruins, given further on, will convey an idea of the early Cretan city. But this place has a special interest, arising from the effect of the recent elevation of the coast upon the old port; I shall therefore give a somewhat detailed description of it.

The old walls are seen encircling the southern base of the peninsula upon which the city was mainly situated; they are of the later Hellenic style, with

horizontal courses; and nowhere else in Crete are Hellenic walls of this style so well preserved, except at the recently found Arkadia between Gnossus and Gortyna.

These walls at Phalasarna extended from the edge of a precipice over the north coast of the promontory upon which it stood, to the low shore of the bay on the south side, and along the edge of a low tract of land that gives to the site of the city the form of a peninsula. Pashley thus describes them:—

"Remains of the city walls of Phalasarna exist, in a greater or less degree of preservation, from its northern side, where it seems to have reached the sea, to its south-western point, cutting off the acropolis and the city along with it, as a small promontory. In the existing remains of these walls, near the sea on the north side, there are seen square projections, which we may suppose to have been the places of towers. One of these projections is found near the very northern extremity of the walls; it is succeeded by a curtain, if I may consider the towers as bastions, and may use a technical term of the art of fortification, 120 feet long; another interval of 230 feet brings us to a third tower, the face of which is 36 feet, while its flanks are 20 feet long. A hundred paces more and we arrive at a little chapel dedicated to Hághios Gheórghios; and 120 feet further on is another projecting tower or bastion, after passing which the di-

rection of the walls changes, and, instead of proceeding southward, turns to the east. *Following them in this new direction for about* 120 *feet, on an elevated ridge where their foundations are visible all the way, we arrive at a mound of large hewn stones, lying about in such confusion that it is impossible to say of what building they once formed a part. One naturally thinks of Dictynna's temple. From this point the course of the walls again changes, and resumes very nearly its original southerly direction. Their length from this point to the southern sea, near the artificial port spoken of by the ancient writers, and the situation of which is immediately discerned, is about* 200 *paces.*"

On reference to the plan of the ruins here given, which I made on my first overland visit to the spot from Khania, it will be seen by the reader that Pashley minutely describes the whole of the trace of the walls, and especially, in the last part of the paragraph, of the several directions taken by it, over the level ground in front of the modern chapel of St. George. This I regard as specially interesting from its having been the clue to my discovery that the elevation observable on the sea-cliffs along the whole of the western coast of Crete was subsequent to every historical record of the cities situated upon it, while yet, although amounting here to the remarkable height of 22 feet, and to about 26 feet further along on the south coast, it is wholly without tradition or record.

It is necessary here to remind the reader again that Phalasarna was described by Strabo (book X.) as the port of Polyrrhenia, and distant 60 stadia from it; and from an early geographer, Scylax, we learn that "Phalasarna is situated to the west, and possesses an artificial port and a temple sacred to Artemis," and that "the goddess is called Dictynna."

In the 'Stadiasmus' it is also noticed as an ancient city with an "emporium or trading-port," and with a temple to Apollo within the port. Scylax adds that it was the first city on the west promontory of Crete, and was a day's sail from Lacedæmon.

It was natural that on my first visit to the city, its

P. Scharanz del. from a Sketch of T.A.B.S

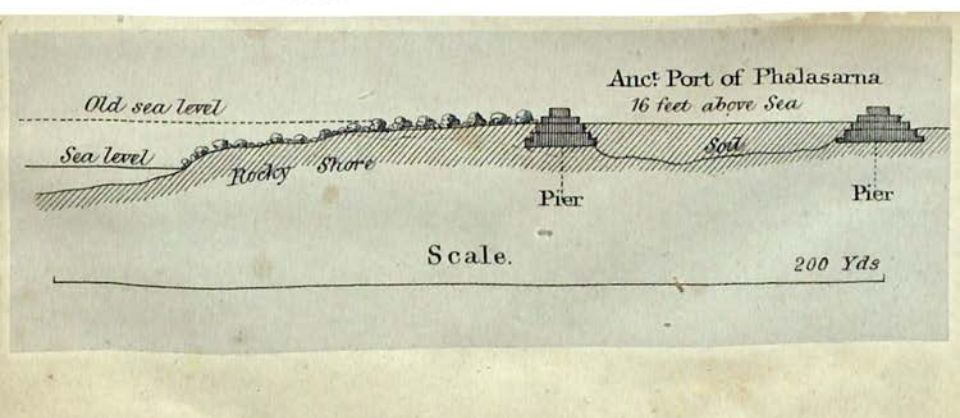
KUTRI THE ANCT PHALASARNA.

Hanhart lith

artificial port having been thus referred to by so many authors, I should make special search to identify it; for although Pashley seemed to be satisfied that the mere indentation of the rocky coast-line under its walls was the said port, I could not be reconciled to that opinion. But I looked in vain for some mole in the sea in front of the indentation to render it somewhat sheltered and safe as an artificial emporium or trading-port; there was not even a sandy beach at any part of the rocky shore upon which a vessel could be safely landed, or hauled up, in the least swell or sea; all was sea-worn rocks and very rugged. Consequently, as the indentation was open and exposed to all south and south-westerly breezes, and the whole western swell for a distance of 500 miles or more, and the low outlying islet of Petaledes off it affords but little shelter to the bay, I could nowhere recognize the trading-port, and left the place with its phenomena greatly puzzling me.

On a subsequent visit, however, and after a contemplation of the plan I had made, remembering also that on a former visit to the island of Cerigotto an elevation of the coast was observable there that was clearly, from local evidences and traditions, subsequent to the historical period, it occurred to me that the same might have been the case here, although so much greater and more general, and that the quadrangular space enclosed by the unusually massive

Hellenic walls upon the plain in front of the chapel of Agios Giorgios, minutely described by Pashley, might be the artificial port referred to, although now so far from the sea. And the more I examined the walls and the part enclosed, on this second visit, the more was I convinced of the truth of this view; but, to have positive proof of it, I referred the level of the area thus enclosed to that of the highest sea-mark on the cliff round the bluff headland upon which the city stood, and found that the sea-mark was three feet higher than the present level of the plain within the enclosure (as shown in the section below), and that consequently, if this part of the island were to be again submerged to the level of the uppermost sea-mark, the enclosure would be now three feet under water, even with the present depth of soil accumulated within it, and the thick walls of squared blocks surrounding it would form the wharves and quays of a beautifully enclosed port, thus restored to its ancient condition and use.



This solution of the question, fixing the period at which the great elevation of this part of the coast occurred, has enabled me to account for the absence of the ports noticed by ancient authors at other towns in the south-western part of Crete, as well as other geographical difficulties in reconciling the modern features with the ancient descriptions.

The coins of Phalasarna are not common. They bear the figure of a trident, emblematical of its position upon the sea-shore.

The principal remains existing upon the site of Phalasarna are chiefly of the Cyclopean and Hellenic terraces which supported the streets and city, and of scattered buildings that were habitations and towers, or in some cases probably small temples—all of which were built of squared or unhewn blocks, and without mortar; like those of Olus, some of them were divided into several compartments, and have their stone door-posts still standing erect. As the north face of the promontory was defended by inaccessible precipices descending to the sea, look-out towers were alone necessary upon the eminences over it; consequently no walls exist there.

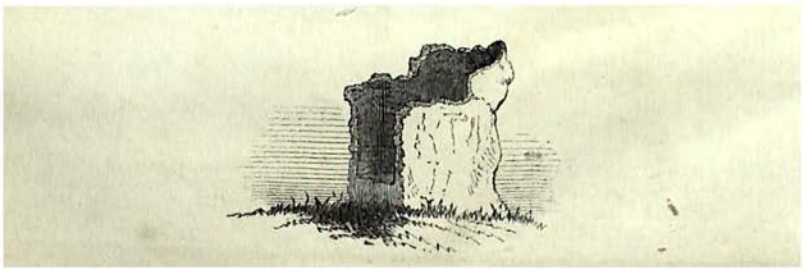
On the narrow gap seen between the two cliffy peaks or summit of the promontory there stood a building of some size, leading to which was a flight of steps. This may have been either the temple of Artemis or Apollo, although the former appears by

the 'Stadiasmus' to have stood at the port, upon one of the square platforms in connexion with the walls enclosing which the ruins of the temple seem to be identifiable by the fragments of two columns and by two blocks with triglyphs of a Doric cornice which still lie upon one part of its solid basement.

The face of this platform having also a frontage of seventy feet, there was space for a small building upon it.

The fragments are not, however, in marble, but a calcareous sandstone similar to the greater part of the walls and buildings of the city, and obtained from sandstone-quarries extending along the coast to the south of the town—the relic of a recent quaternary deposit. Amongst these quarries are several rock tombs and monolith masses, which the quarrymen had not quite worked out when the city became depopulated.

The roughly-wrought block of sandstone of which the following is a representation, somewhat like a chair or throne, and conjectured by Pashley to have been intended as such, was one of them, but, rude and



misshapen, too low for the legs and too high for the arms as a chair, and of such mean and perishable material, could never have been intended to be removed anywhere as a throne; yet it might have been used locally as a bema from which to address the Phalasarnians, not as a chair or throne. We are, however, indebted to the able scholar Pashley for a learned dissertation on thrones, in his pages upon Phalasarna—to which I must now refer the reader and traveller who desires information upon ancient thrones, but not to his sketch of the supposed thronos as a true representation of the monolith bema of Phalasarna.

CHAPTER XX.

DESCRIPTION OF THE ENNEAKHORIA DISTRICT — EFFECT OF THE UPHEAVAL UPON THE THREE MUSAGORÆ ISLANDS AND UPON THE LITTLE PORT BIENON AT THE SOUTH-WEST EXTREME OF CRETE — THE SOLFERINO THUNDER-STORM EXTENDED TO CRETE — THE OLD VENETIAN CASTLE OF SELÍNO — THE MANY ANCIENT CITIES IN THE SELINO DISTRICT — EFFECT OF THE UPHEAVAL UPON SUIA THE PORT OF ELYROS — PICTURESQUE COAST SITE OF PŒCILASSUS.

THE extreme western part of Crete, although very mountainous and barren in its aspect from seaward, contains several very fertile valleys, the finest of which is that of Enneakhoria, which doubtless takes its name from a small town that formerly stood near it, named Inachorium, and mentioned by Ptolemy only.

This valley was crossed by Pashley; and the details of the topography for our Map, as well as of the adjacent coast, were obtained by Lieut. (now Commander) Mansell, who found the valley of Inachorium to contain fifteen or sixteen villages and hamlets, but to possess no ancient remains. It appears to be a remarkably beautiful and healthy district; and the villages, which are each buried in a knot of fruit-trees, are chiefly inhabited by Greeks. It is divided into two parts by a central ridge which unites the two high

and parallel ranges enclosing the valley, causing the streams that fall down their sides to flow partly to the gulf of Kissamo on the north coast, and partly south-westerly to the west coast.

Crete terminates to the south-west by a cape or headland named, from its resemblance to a ram's forehead, Kriumetopon, around which were said to lie the three islets named Musagoræ; but as only one island (Elaphonisi, to the north-west of the cape) now exists, and that one only separated from Crete by a narrow and shallow channel, the other two can only be recognized by taking account of the recent upheaval of the coast, and supposing a submergence to the amount indicated by the marks upon its headlands and cliffs, viz. from twenty-three to twenty-four feet. The two points of Trakili and Selino to the east of the cape (which at present are high peninsulas joined to Crete by low alluvial plains) would then become islands also, and thus complete the exact number of those that were said to have been situated around the cape, and without adding another at any other point. Each island would then be separated from Crete by channels from half to nearly three-quarters of a mile wide and from three to four fathoms deep.

This rectification of the ancient geography of this part of the coast is further confirmed by the features of a little haven, called Bienon, mentioned only in the anonymous 'Periplus,' as being to the north of Kriu-

metopon and having fresh water in it. For we found this little port, as described, a little to the north of the cape, and known as Port Krio to the native coasters of the present day, but so shallowed and reduced in dimensions by the recent upheaval of the shore as to be available only for two or three coasting-boats.

It was formerly in the shape of a semicircle, with a ridge of rocks extending, like the chord of an arc, nearly across its entrance, which were then awash or perhaps only a few feet above water, thus serving as a natural breakwater; but now they rise twenty feet out of it in some parts. The cove was formerly about two cables and a half, or a quarter of a mile, wide; but now there is room for only two or three caïques. We found upon the margin of the port the remains of a building of much later times, that seems to have been a church; and near it are three or four fragments of columns of red and white marble, and a Corinthian capital, evidently brought from some other locality, probably with the view of building another church or rebuilding this.

On the day that I last visited this part of the coast the two greatest military nations of Europe, under the command of their emperors, were contending for an idea, and military supremacy, at Solferino. The events of the latter part of that day, as is well known, were influenced and materially effected by a thunder-

storm, which for a time paralyzed the efforts of the belligerents and thus had an important effect on the result of the conflict. That storm, and at nearly the same time, extended to this part of Crete, where such thunder, lightning, rain, and wind are unusual at this season; I never remember another instance in these latitudes. It came from the north-west, and darkened the whole sky for nearly an hour here as at Solferino, where it stayed the carnage; and I notice it on account of its remarkable coincidence and extended action. Waterloo had its preceding heavy thunder-storm and rain, which likewise acted upon the events of that important day. And those who were at the fall of Sevastopol know how much it was aided, through the intended attack and immediate preparations being masked, by the effects of the gale that sprung up just before the appointed hour for storming the place, and enabled the allies more easily to surprise the Russians. How ought these facts to teach us that the fate of armies, as of nations and empires, lies at the feet of Him who rules the hurricane and commands the elements, more than with numbers and generalship!

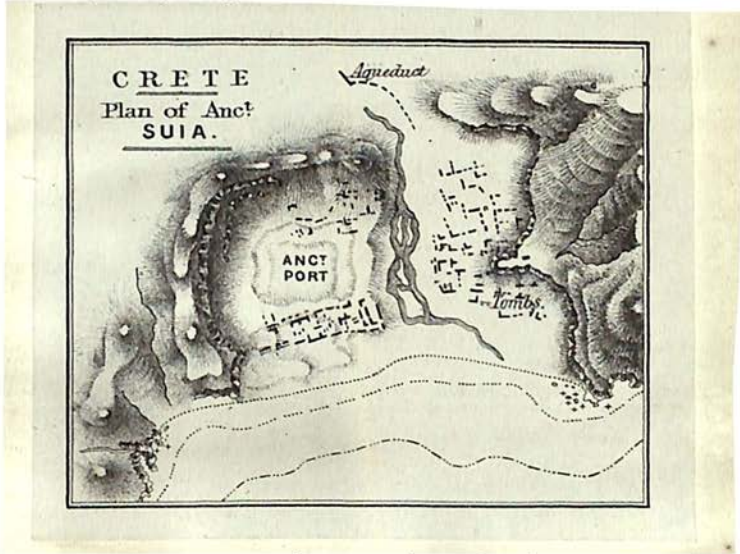
The low, flat hill forming the extremity of the point of Selino, which was one of the Musagoræ insulæ before noticed, has the remains of a small Venetian fortress upon the north-east corner of its level summit. And it was an important station dur-

ing the Venetian occupation of Crete, having a good summer roadstead and anchorage in the bays on either side of the point; but it is now deserted. The neighbouring valleys and uplands in the western part of Selinon are divided between Christian and Turkish inhabitants, of whom the latter constitute the majority.

The district of Crete from which the fortress of Selino took its name forms its south-west eparkhia, included within a radius of eight or ten miles from the ruined castle, and, considering its very mountainous character, is remarkable for the many ancient cities which existed within it.

Of these, Kalamydes, Kantanos, Hyrtakina, Lissos, Elyros, and Suia were identified by Pashley from their existing names or remains, and have been fully described by him. Three of them struck their own coins as independent republics, namely Lissos, Hyrtacina, and Elyros, although these coins seem to indicate an alliance between them. Excepting the two coast-cities of Lissos and Suia, they were all situated upon mountain-summits; and both Cyclopean and Hellenic remains exist to identify them. Lissos and Suia were proximate, the latter being the port of Elyros; but both, according to the 'Stadiasmus,' possessed harbours, yet at neither is there now any place to shelter a boat unless hauled ashore; but their positions are clearly recognizable by imagining a submergence to the amount indicated by the sea-

marks upon the coast-cliffs; and at Suia a long line of ruins of buildings lies parallel to the shingle shore, which appears to have been a sort of embankment or mole. (See plan.)



At Lissos there are the remains of a theatre seventy-eight feet in diameter, some vestiges of a few large buildings, and many built tombs that were arched—the former of small stones and mortar, which are scattered upon the picturesque sides of the little pent-up valley in which the city stood, around parts of which rise a fringe of inaccessible grey cliffs, forming its natural walls and battlements. The site of Lissos takes its modern name of Agios Kirkos from a small church there, having no habitation within it.

The maximum upheaval of the coast seems to be between Selino and Lissos, where it is about twenty-

six feet, but at Lissos and Suia it is only twenty-two feet, showing that from that point there is a decrease in the upheaving energy as we proceed eastward.

Suia, the port of Elyros, stands upon the widest bay and valley in the south-west of Crete; but the latter contracts into a fine gorge a short distance inland, and, excepting here and there, is cultivable only in its upper part. The remains here are chiefly those of habitations of a late date, with the ruins of some churches and of an aqueduct. We found also some fragments of an inscription upon some blocks that belonged to a building of a better style and time than the one in which they were found.

A wide stony torrent-bed divides the little plain at the mouth of the valley, and separates the ruins of the city into two parts, in front of which is a very wide and steep beach of shingle; so that not the least indication of a port exists at the present time. The town lay chiefly on the east side of the torrent-bed; the ruins on the west side of it, as I have before remarked, consist of a long artificial embankment of considerable width and length, that would be just above the sea at its old level previous to the upheaval, and would render the level space lying behind it a well-sheltered and capacious port, if cleared of the soil that has been washed into it; for it seems to be filled entirely with fragments and soil carried down from the steep stony hill above it. I therefore re-

cognize this as the ancient port of Suia referred to in the 'Stadiasmus;' and its still retaining the name of the city marks it as being the same. I visited the site of Elyros from Suia; the ruins of the old city are much fewer than those of Lissos, although occupying a much finer and more extensive site; and I found traces of an ancient road leading down from it towards its port of Suia.

The bottom of the sea deepens so steeply and rapidly off the valley of Suia, that anchorage for a ship is not found unless very close to the shore; but off Lissos there is a better roadstead. I anchored, however, off Suia for a day and night, with the kedge and a whole length of hawser; but as it had no hold upon so steep a bottom, the land wind at night, although very gentle, caused it to be easily dragged down the incline into a depth of 100 fathoms, carrying with it the iron can buoy that was attached to the anchor to the depth of 70 fathoms; and when the buoy was brought to the surface again with the anchor, its sides had collapsed nearly flat under the great pressure of the water at that depth, although presenting considerable resistance to that pressure by its shape as a double-coned cylinder of iron.

The wildest and most picturesque part of the coast of Crete commences to the eastward of Suia; for the roots of the Omalo Mountains, and also those of the higher group of the Madara Vouna or White Moun-

tains, following them to the eastward, press upon the shore here in remarkably bold and precipitous ridges, which are separated or cleft by deep valleys and steep gorges that are almost inaccessible except by sea.

The first of these is about six miles east of Suia, called Tripiti (as written according to the Italianized official orthography, but as pronounced in English Trepetee): this part of the coast is remarkably picturesque. Two peaked crags almost touch at the entrance of the gorge, as two portals to its entrance; but the valley expands immediately within them, as seen in the view below. About a mile up it I found

TRIPITI.

some ancient terraces on the side of the hills to the left, with vestiges of habitations upon them; and upon a rude slab of limestone built into one of these was an inscription referring to a temple of Serapis, which must have stood somewhere upon the site. This inscription is now in the Fitzwilliam Museum at Cambridge. (See Appendix, Plate II. No. 16, of Inscriptions.) The valley has no inhabitants but shepherds now, from its position, inaccessible except by sea. A wild fig, of good quality, grows abundantly upon the hills above; and fir timber is also sometimes exported from here by the Sfakians, this being the only spot in Crete that produces it.

Tripiti is without doubt the site of the Pœcilassus of both Ptolemy and the 'Stadiasmus,' although the former places it to the eastward instead of the westward of Tarrha, the next city to Pœcilassus; for the author of the 'Stadiasmus' states that Pœcilassus had a port, and, although there s not the least indentation of the coast there now to give the least shelter, or even a beach at the mouth of the valley of Tripiti upon which to haul up a boat, but on the contrary a steep rocky ledge some twelve or fifteen feet high, up the face of which it is difficult to scramble, yet, if we follow the sea-marks on the cliffs on either side, indicative of the upheaval since the historical period (which are very defined and about twenty feet high), and imagine a subsidence to that

level, so as to bring the sea up to it, we have at once the port required, here as at Suia and Phalasarna; for the mouth of the valley would then become a narrow and well-sheltered inlet or creek, expanding immediately within its entrance, and would thus form a natural harbour without any artificial aid, such as that seen at Lissos and Suia, and such as it must have been in the time of the author of the 'Stadiasmus.' This is therefore another interesting verification of the descriptions given by early geographers, and another proof of the great upheaval along the coast having taken place since a late Roman period, the date of the 'Stadiasmus' being considered to be about that time.

CHAPTER XXI.

THE GORGE OF ROUMILI—THE RUINS OF TARRHA AT THE MOUTH OF THE GORGE — ANCIENT SCULPTURE SEEN AT ROUMILI — PORT LUTRO THE ANCIENT PHŒNICE—AN OBJECTION TO THE UPHEAVAL THEORY ANSWERED — RAISED BEACHES — LATIN INSCRIPTION — RUINS OF PHŒNICE — HAMLET OF LUTRO — ASCENT TO ANAPOLIS—TOWN OF SFAKIA.

THE next gorge to Tripiti is that of Roumili, about six miles further to the east, which is embayed between two bluff but not prominent capes. Pashley has given views of, and described very fully, its wild scenery—a magnificent mountain-gorge, opening from the Omalo upland upon this part of the coast. Tarrha, as he also shows, by the late Roman and middle-age remains he found on the east side of the gorge, was situated directly upon the sea-shore, at the entrance of this cleft or gorge; but the better part or the earlier remains of the city he evidently missed. These I found on the west side of the gorge, where there are the ruins of a large Christian church upon the basement of an Hellenic building which, I have no doubt, must have been the temple of Apollo, said to have stood here, and of which the Florentine traveller, Buondelmonte, who visited Crete in the early part of the fifteenth century, saw considerable re-

mains, but which Pashley missed by confining his examination to the eastern bank of the torrent, he having entered the gorge from that side. On the western side there are also ancient terraces and a few tombs, together with a fine mill-stream turning two mills. Not far from the ruined church are some few fir trees, one being of the remarkable thickness of nearly four feet.

We anchored off here conveniently during several very fine summer days, and obtained a supply of water for the ship with great facility at the mill-stream as it rushed to the sea over the steep pebbly beach forming the shore of the bay.

The village of Roumili, situated about a mile up the gorge, contains about twenty-five families, the inhabitants of which looked sickly and cadaverous from the influence of malaria and the want of sunshine, since the hamlet is situated where this cannot enter it till four or five hours after the sun has risen; the inhabitants are therefore poor in consequence of their sickly condition and the little land available for cultivation, which compels them to depend chiefly upon their flocks (which pasture upon the mountains above) and, for an occasional meal of animal food, upon the wild Ibices which live amongst their crags and precipices.

In a house within the village I found a sculptured tablet of white marble, apparently funereal. It was

a fair work of art, but is much defaced. It contained a group of five figures, viz. a female sitting with a child at her knees, a male figure in lower relief, who appears to be her husband, standing behind her, and in front of her her two warrior sons, armed with shield and helmet, and clothed only in a kilt, of whom she is apparently taking leave, having the hand of each in one of hers, whilst their other hands were pressed to their breasts and grasping a dagger, as if swearing revenge for a wrong, or courage and fidelity before an enemy.

The upheaval observable at the cliffs at Tripiti was 20 feet, but at Roumili we unexpectedly found it reduced to about 12 feet only.

The wild and open bay of Roumili is succeeded, at six miles to the eastward, by a small but high promontory, upon the east side of which is a narrow inlet turned towards the west, which forms the winter port of the Sfakians, and is called Lutro; and it is the only port on the south coast of Crete in which a vessel could find security for the whole season*.

This fact will of itself identify it as the ancient port Phœnice mentioned by St. Luke, in his account of the voyage of St. Paul (Acts, xxvii. 12), as "an haven

* For fuller details regarding this port as a safe anchorage for a few ships, see my description of the coast of Crete, as a periplus under the title of "Sailing Directions," published by the Admiralty at the price of one shilling.

of Crete, that lieth towards the south-west and north-west," and in which it was desired to winter with the Alexandrian ship after quitting the less secure Kaloi Limenes or Fair Havens,—an identification which is further confirmed by the ruins of the city Phœnice which at present exist upon it, and from its name being still applied to the wide bay on the western side of the promontory.

Pashley had before fully shown that Port Lutro must be Phœnice, from its proximity to and connexion with the cities Anapolis and Aradena, the sites of which he found just above it, and identified by the existence of the modern villages of the same names.

The port itself is somewhat difficult to recognize from the sea, where the coast is throughout so bold, lofty, and unindented. Its situation is, however, indicated, when sufficiently near, by the recognition of the promontory within which nature has carved it, and by its proximity to the town of Sfakia upon another point to the eastward of Lutro, it being the only town upon this part of the coast, as Ierapetra is the only town on the eastern part. Lying immediately south of the highest part of the White Mountains, its surmounting cliffs and steeps, varied by the richest tints, peculiar to limestone crags and precipices, combined with their reflection in the mirrored surface of the blue depths of the confined bay beneath them, present a magnificent picture as the port

is approached. But the little hamlet of Lutro, upon the strip of shingle shore at its head, is not visible till the cove is almost entered and the point of the island at its extremity is passed.

Having been suddenly called from Crete in the summer of 1853, just as I had arrived at the port of Lutro, I was unable to complete the survey of this part, and to have a plan of the port made, until my return to Crete to finish its survey in the month of July 1859, when I anchored there for this purpose in H.M.S. 'Medina.' A Turkish man-of-war schooner that was stationed on the coast was also lying there; and yet there was ample room for ten or twelve more similar vessels, if judiciously moored.

The identity of the port and city of Phœnice with those of Lutro are thus indisputable; and the words of St. Luke, that it was a haven "towards the south-west and north-west" (which have presented much difficulty to commentators on the voyage of St. Paul), have been already explained by me in the early part of this volume as probably referring to the course of St. Paul's ship to reach it from Fair Havens, and not to its form.

In the last edition of my friend Mr. Smith's learned work on St. Paul's Voyage is an interesting letter from the Rev. G. Browne, describing a visit to Port Lutro, in January 1856, in the yacht 'Ursola,' wherein he says:—"The land cannot have risen materially

since the Christian era, for we found an ancient tomb or columbarium with its entrance close to the water's edge, and not eight feet above, in the inside of the point." This seems to refer to a statement of mine in a letter to the late Colonel Leake, and which appeared in a well-read periodical, that this part of the coast had been elevated several feet since the Christian era—a statement I am enabled to confirm, especially in respect to Lutro, where it amounts to 13 feet 6 inches, and to add also that the ancient tomb noticed by Mr. Browne "not eight feet above" the present level, which he cites as a proof against any such elevation, is, with all deference to this amiable gentleman, merely a sea-worn arch of the rock—very much like a rock tomb, it is true, from its rather remarkable rectangular form. But, in proof of my statement, if its sides had been closely examined by the reverend gentleman, there would have been seen the several successive marks of the levels at which the sea stood, the highest being over thirteen feet, as I have previously stated; and moreover the surface of the arch is here and there perforated with the cylindrical holes of boring sea mollusca and worms, in some of which the shells remain at present either loose or fixed by indurated soil and stalagmitic incrustations.

The not having had an opportunity of observing these indications of the upheaval of the coast elsewhere doubtless prevented Mr. Browne from recog-

nizing the fact here; for it requires the scrutinizing eye of one interested in the facts connected with such geological research to observe them; but when once seen and understood, they cannot be mistaken or forgotten.

And at the mouth of several of these gorges along this coast there are also many evidently raised beaches much higher and of a much older time than the markings here so frequently alluded to (and they are particularly observable on the coast to the west of the promontory of Phœnice, or Lutro), the lowest of them being nearly 40 feet above the sea. Several other such terraces occur above this, with and without beach-evidences, more than 100 feet high; but their origin is clearly indicated by the sea-worn cliffs above and at the back of these terraces.

A Latin inscription, first copied by Commander Mansell, which Mr. Browne notices having also seen at the entrance of the courtyard belonging to the captain of the port of Lutro, and which is of interest from its mention of the Emperor Nerva, who was of Cretan extraction, shows that Lutro was a port frequented by Alexandrian ships, and thus adds to the evidence for its identification as the port at which the captain of St. Paul's ship hoped to winter. Of this inscription (which, together with the annexed translation, is also given in the preface to Mr. Smith's work, p. vii.) the following is a copy:—

IOVI.SOLI.OPTIMO.MAXIMO
SARAPIDIETOMNIBVSDIISET
IMPERATORICAESARINERVAE
TRAIANOAVGGERMANICODACICON
EPICTETVSLIBERTVSTABVLARIVS
CVRAMAGENTEOPERISDIONYSIOSOSTRA
TIFILIOALEXANDRINOGVBERNATORE
NAVISPARASEMOISOPHARIACLTHEONIS

"Epictetus, the freedman and recorder to Jupiter O.M., to Serapis and all the gods, and to the Emp. Cæsar Nerva Trajan Augustus Germanicus Dacicus. The work was superintended by Dionysius of Alexandria, the son of Sostratus, and master of the ship whose sign is Isopharia, of the fleet of Theon."

The ruins of Phœnice, now visible on the promontory of Lutro, are chiefly the foundations of its habitations, with some few built tombs and terraces scattered over the slopes on its sea face; and they appear to be exclusively of a late Roman and early Christian period, from the Roman brick or tile used in some of them, and from several of the larger ruins or buildings appearing to have been Christian churches and monasteries.

The hamlet of Lutro, at the head of the port, consists of about fifteen houses; but only four are inhabited at this time of the year, it being used mainly as the winter retreat of some of the shepherd families who inhabit the little upland plain of Anapolis im-

mediately above it, and who descend to the port with their flocks during the severe months of winter, when the snow lies on their uplands and the mountain-tops are without vegetation.

The ascent to Anapolis is so steep that it is hardly practicable to ride up to it from Lutro by the only road leading to the upland plain, which is 2000 feet above the port, or to proceed to the neighbouring and once important Cretan town of Sfakia, and through the upland by it, except for a great part on foot; and although Sfakia is situated upon a rocky point of the coast at about three miles only to the eastward of Lutro by sea, it is a fatiguing journey of more than three hours and a half to reach it by land, from the difficulty of crossing the intervening deep and steep ravines and ridges that characterize the whole of this magnificent but somewhat forbidding part of Crete. It was this difficulty, doubtless, that led to the removal of Phœnice to Sfakia, its representative at the present time.

Sfakia is at present the only town, besides Ierapetra, situated upon the south coast of Crete; and it hardly numbers now 100 families, although previously to the Revolutionary War it had nearly 500 houses, and possessed nearly twenty vessels of square rig, such as brigs and schooners, and was known as an enterprising community of patriot sailors and merchants, like their brothers of Ipsara and Casso; but their lawless daring

and illegal trading have greatly damaged their reputation amongst oriental merchants, and induced the local Government to prohibit export trade from their port to prevent smuggling. The Sfakians have always been a byword, too, for wrong and rapine among their lowland countrymen, as well as for courage and patriotism, as Pashley and others have shown.

As light troops and archers and slingers the Cretans were always celebrated, and took part as mercenaries in nearly all the Roman wars in the East; and no doubt, as the most hardy of the mountain inhabitants, the Sfakians then formed a large portion of the Cretan contingent on those occasions; and the sculptured fragment I have noticed at Roumili may have reference to the departure of two of its warriors for one of those wars.

CHAPTER XXII.

VENETIAN CASTLES AT SFAKIA AND FRANKO KASTELLI — HEROIC DEATH OF HADZI MICHALI—FACILITIES FOR FORMING A PORT OFF FRANKO KASTELLI—SLOPING COAST PLAIN—GEOLOGICAL REMARKS UPON ITS FOSSILS — THE CESTUM VENERIS—ITS DELICACY AND BEAUTY—THE BEROË—AGIOS VASILES—THE MOU'ERY AND VALLEY OF PREVELI—ABSENCE OF ANCIENT REMAINS IN THE DISTRICT OF MOUNT KEDROS.

To the eastward of the town of Sfakia the mountains diminish in elevation, although not in boldness or ruggedness of character. They are intersected by several deep gorges and ravines that descend from the eastern shoulders of the Madara Vouna, and render the only roads leading to this south-western coast town of Crete difficult, and even in some parts dangerous, to an equestrian traveller.

The mountain-steeps of this famed province are in general too rocky and abrupt for cultivation, without great industry and labour. The only cultivated land belonging to the comparatively few scattered inhabitants is confined chiefly to the upland basins and plains of Aradena, Askyfo, Asfendu, and Kalikrati, that lie upon the flanks and shoulders of the eastern branch of the White Mountains, all of which, from their elevation and the steep or narrow approaches leading

to them, may be considered as the natural fastnesses of this ancient race, from their easy defence by a few resolute mountaineers skilled in the bow or the rifle. The authority of the government in these localities is but feeble, in consequence of such natural advantages favouring a community of men who have little respect for civil laws or social rights not coinciding with their own traditions and customs, or the interests of their own clan; and the power of the law seldom reaches them, in spite of grave offences and deeds of violence.

In the time of the Venetians there was a small fortress or castle at Sfakia; but it is entirely destroyed now, and the Turks have no stronghold in the whole district, in which to lodge a garrison sufficient to awe the proud spirit of the Sfakians and keep them in subjection to the law.

The Venetians had another castle on this coast, called Franko Kastelli, situated upon a rather low part of it, at about five miles east of the town of Sfakia, and just upon the borders of the provinces of Sphakia and Lampe (or Agios Vasiles), where the mountains fall back from the shore for a breadth of from three-quarters to more than a mile, leaving between them and the sea an inclined stony plain which extends along its margin for seven or eight miles. Several villages picturesquely dot the craggy steeps rising from the inland margin of the plain, round

each of which is some terraced cultivation and a knot of olive- and fig-trees.

Franko Kastelli stands upon the sea-margin of this narrow coast plain. It is a high quadrangular building, with towers at its four corners, conspicuous from the sea, and presents a picturesque appearance where so few buildings of any kind, modern or ancient, exist. The castle is partially in ruins, however, and consequently remains unoccupied by troops; it is also isolated from any habitation. But it is celebrated in Cretan history and song, in connexion with the revolutionary struggle for independence, as the scene of an encounter between the troops of Mustapha Pacha, the Albanian general of Mehemet Ali, and a band of Cretan and Morean patriot Greeks under a famed chieftain named Hadzi Michali.

Being besieged within the castle by the Mussulman troops, he resolved to head a sortie against them, break through their line, and so gain the mountains with some of his devoted band; but he fell in the attempt, a few hundred yards in front of the castle, with most of those who followed him. Hadzi Michali is in consequence a héro in Cretan song, and the record of his gallantry and devotion warms the heart of every Sfakiot and patriot when sung on days of festivity and commemoration or referred to by the stranger.

It is locally affirmed that the Venetians' contem-

plated, not long before they were obliged to surrender the island to the Turks, making this the most important station on the south-west coast, by forming a well-sheltered and capacious harbour in front of it, which undoubtedly could be accomplished with great facility, and at a comparatively small cost, from the natural advantages existing for doing it; for there lies immediately off the castle a long reef of rocks that are for the most part just awash, and could be easily converted into a good mole by proper engineering. It lies detached from the shore, with a sufficient depth between, and which is now used in the summer season by the few small vessels that trade along the coast.

No ancient port or no ancient city existed upon the site of Franko Kastelli in ancient times; for these conditions did not then exist: the rocks were then, no doubt, two or more fathoms deeper, since the temporary shelter they now afford by their shallow depth below the surface has been the result of the subsequent upheaval I have so often referred to, and still trace evidences of as we proceed eastward towards the Messara Bay or the foot of Mount Ida, near which it disappears and is replaced by decisive evidences of a downcast, as shown in my description of Metallum, in the second chapter of this volume.

We anchored for a few days in the summer of 1859 off a bay to the eastward of the Franko Kastelli

rocks, and near a small rill of water that flowed over the white marly cliffs fringing the shore margin of the narrow inclined plain of Franko Kastelli. Several similar streamlets or rills exist along it, issuing from the gorges and ravines that are cleft or carved in the mountains over it. One of these rills was highly charged with carbonate of lime, and so rapidly deposited the sediment upon the vegetation it trickled over, as to form at the edge of the cliff down which it dripped very beautiful pendent clusters of petrified ferns and other plants which grew under it.

The Franko Kastelli plain is but poorly cultivated, notwithstanding this supply of water for fertilizing its surface, mainly, no doubt, from the want of population; yet labour and skill, if devoted to it by its present few inhabitants, could render it far more productive. But the Sfakiot only cultivates barely sufficient for himself and cattle; he prefers the free life of shepherd, pedlar, and pilferer to that of a settled agriculturalist, and thus is a plotter of mischief or a ready tool of the political intriguer and local disturber.

The sea-coast margin of the plain of Franko Kastelli is for the most part bounded by steep embankments or cliffs from 50 to 100 feet high, which the sea undermines and encroaches upon; and in consequence some good sections of the strata occur. These, for the most part, are white and grey marls, more or less indurated, and containing not only a few bivalves

(chiefly *Corbula*?), but abundance of the impressions of *Cleodora* and *Creseis* and many Foraminifera. The discovery of them in such abundance shows that the deposit was formed at a depth of 100 or 200 fathoms at least, although so proximate to the base of high and steep mountains which were then above the sea; and they are specially interesting from their rarity in general, although they have been recognized, by my lamented friend the late Edward Forbes, in some of the lowest strata containing evidences of organic life—thus presenting an instance of the persistency of type in creatures of such low organization.

The abundance of these fossils at this locality induces me, also, to make some remarks upon them and their common associates when living; for amongst the many interesting creatures that are occasionally found swimming in the superficial waters of the Mediterranean and other seas, there are none so attractive to the common observer and student of natural history as these very delicate and fragile creatures and their transparent gelatinous companions that are without a shelly covering, but which are equally beautiful in form and as curious and interesting in their organization—especially that very rare, delicate, ribbon-shaped animal the *Cestum Veneris*. It has been only on one occasion seen by me, in all my explorations and researches in the surface waters and deeps of the Mediterranean; and not having seen

any correct picture or description of it, I here give, together with a drawing, a few details of its organization.

This specimen and several others were caught by me in one of the deepwater bays of Crete, and were accompanied by a large school of almost every species of the delicate creatures that are occasionally found sporting near the surface when it is calm, and the sea smooth, viz. the *Beroë*, *Firola*, *Salpa*, &c.

The *Cestum Veneris* is figured in Cuvier, and described as inhabiting the Mediterranean waters, and sometimes attaining a length of five feet. But the longest of the specimens seen by me on the occasion of my fortunately finding them in such abundance did not much exceed two feet.

They are rather difficult to procure entire, without injury, from their length and delicacy as well as transparency. Yet they may be safely secured whole by dipping them up with a large wide-mouthed vessel or glass vase; and when thus taken up with their surrounding water and without injury, and viewed under a strong light in a glass globe or vessel, the faintly pink appearance of their body, and the brilliant play of iridescent light that flashes along the double lines of cilia at the lower part of it, like the prismatic colours of the rainbow, render the *Cestum Veneris*, above all creatures I ever procured from the sea, by far the most beautiful and attractive; and, with their

companion the *Beroë*, and others of similar transparency and delicacy, they rather appear to be living phantoms than real creatures, being hardly distinguishable from the crystal medium they sport in—that is, unless seen in certain positions and conditions of light favourable to the manifestation of their presence as a really solid substance with vitality and motion.

The rarity with which the *Cestum Veneris* and some of its associates are found may probably be accounted for by supposing that they ascend to the surface, from the deeper waters of the sea, only at certain seasons and conditions of the surface-waters. Thus as birds and some insects fly high or low according to the atmospheric conditions, so may these delicate creatures of the sea sport near the surface, or descend into its deeper regions, according to its temperature and tranquillity. And temperature has probably the more general influence; for it is probable that the lowest and most permanent temperature of the Mediterranean is more congenial to them than the changeable and frequently higher temperatures which prevail near the surface during the summer season; for the latitudes in which the maximum development of the *Cleodora*, *Clio*, *Beroë*, and animals of similar organization, delicacy, and transparency are found are the high arctic latitudes. Therefore the fact that the temperature of the Mediterranean waters

below the depths of 80 and 100 fathoms is nearly uniform throughout all seasons, viz. 59° Fahrenheit (that is, only a few degrees above, or about the average atmospheric temperature of the locality), and that it is only in the winter season that this temperature reaches the surface-zones, seems to me to explain the reason of these allied Mediterranean species being found less frequently at the surface in the finer days of midsummer than in the calm days of midwinter or spring, when the surface waters and deeps are not many degrees different in temperature.

The *Cestum Veneris*, or girdle of Venus, may be likened unto a faintly pink, fairy-like, flexible ribbon of glass, but divided into two equal wings or arms that extend on either side of its two mouths, and two stomachs into which they open in the centre of the ribbon, as shown in the accompanying plate. Proceeding from each stomach, and extending to the extremity of each arm or wing, are two thread-like canals that lie near the surface, and which unite and terminate in a notch at the extremity, where, probably, are situated the anal apertures, as I could not discover them at the base of the stomach immediately under the oral, where they are placed in Cuvier's description.

The shape of the animal is somewhat that of a wedge; that is, it is twice as thick at one edge as at the other; and it always swims with the thick side

downwards, the two oral apertures or mouths being placed in the upper or thin margin, along the edge of which is appropriately placed a double row of tentacula on each wing, that are capable of being extended nearly the whole breadth of the animal, or retracted into a spiral knot as shown in the figure, and thus mutually assisting to supply the mouths with any food they may individually seize.

This beautiful arrangement, however, is surpassed by the manner in which its cilia are placed. These are situated near the lower margin of the animal, and consist of a double row upon each side of each wing, lying in a longitudinal fold or groove, which affords them protection; and when these beautiful rows of short transparent glassy bristles, which form the breathing-apparatus of the animal, are set in motion and flash the prismatic colours and light along their whole length, no ribbon or girdle, however chaste in design or bright in colour, can surpass the *Cestum Veneris* for soft, delicate brilliancy and beauty.

In the thickest part of the animal, under the cilia I observed numerous circular bodies that I took to be ova, from their evidently globular shape and greater transparency in the centre than around the circumference when individually viewed under a microscope.

The only other remark I need make regarding its structure is that the animal is seen to be thickly studded near its upper and lower margin, and less so

over its surface, with numerous transparent spicula, which might in some instances, if not viewed with sufficient care and for a sufficient length of time, be mistaken for cilia, as they seem to have been by Cuvier, no doubt from his having described them from a dead specimen. They no doubt serve for the internal support of the structure, and, where they project from the surface, for its protection from external injury.

The *Cestum Veneris* in swimming moves very much in the manner of a leech, by sudden impulses; but it frequently changes its direction by fitful starts, advancing with either extremity forward, having no head or tail as in the leech. In this respect, although it has not its peculiar vitality, the *Cestum Veneris* more resembles the *Planaria*, which has a simple mouth in the centre and a stomach ramifying through its organism.

One of the companions of the *Cestum Veneris* caught on this occasion was a species of *Beroë* (the heart-shaped animal figured upon the same plate). This particular species seems to be almost as rare as the *Cestum Veneris*. It is equally transparent and delicate, and thus classes with the rare gems of the ocean, as also from its elegant shape and the beautiful arrangement of its cilia and their brilliant rainbow-flashes when in motion or irritated. As certain species of them are frequently caught in our own waters, and therefore well known, although this seems to be a new variety, the figure and details upon the plate will be

sufficient for this, as also for the strange-shaped animal with a ciliated circular mouth and sac, which was procured at the same time, and is simply one of many that were aggregated in a mass or string, as the *Salpæ* are sometimes found, when they always attract the notice of sailors, as the supposed young of the "sea serpent," from their frequently extending for a length of several feet, and even yards.

I must now close this chapter with a few words upon the most interesting features of the remaining eparkhia of Agios Vasiles, or Lampe, lying eastward of Sphakia, and between it and Mount Ida.

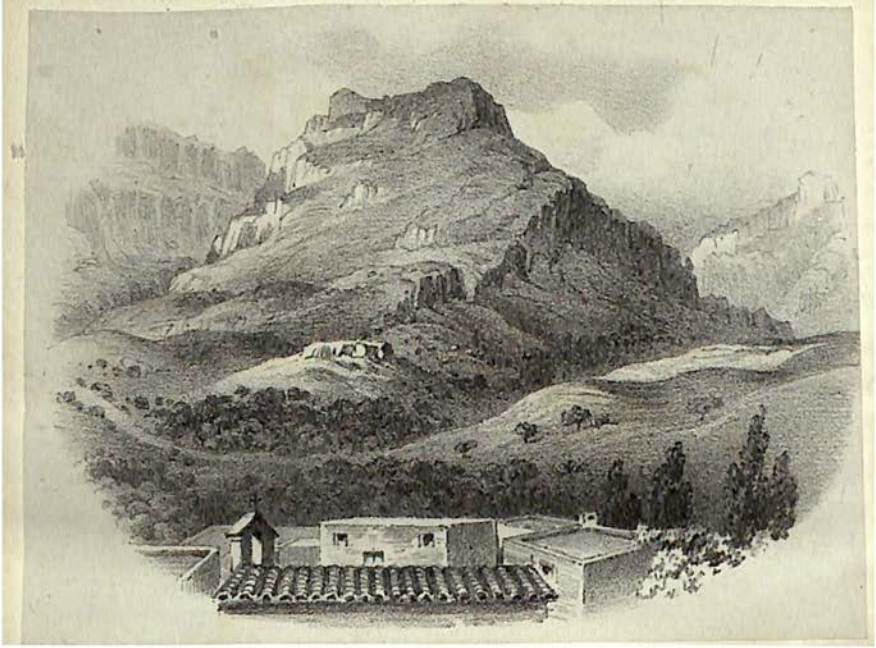
Agios Vasiles comprises the most mountainous portion of the western contraction or isthmus of Crete, and throughout its whole length of about 22 miles is bordered by the shore of the Libyan Sea. Its breadth averages 5 miles.

Enclosed between its mountains are some fertile valleys and plains, which are all at moderate elevations above the sea as compared to the Sphakian plains. They are those of Palaio Lutro, Kissos, and Preveli, besides some of less dimensions near the coast. About three-fourths of its inhabitants are Christians, and one-fourth Mahomedans. Some of the villages are exclusively Mahomedan, of which Atzipades is the largest, numbering about eighty families; among those having only a portion Turkish are Kissos, Speli, Lambine, and Koxare.

One small bay indents its coast nearly in the centre of its extent, called Plaka. A bold rocky point of limestone forms its eastern headland, and affords it shelter from the S.E.; but it lies directly open to the S.W., and therefore is only a summer anchorage. A magnificent gorge opens into the bay, at its head, which derives its name of Myrtos from a village situated about halfway up one of the slopes near its entrance. This village is Greek, and therefore Christian, as are all those near the coast, the Mahomedans occupying the better land in the interior.

To the east of Plaka Bay is the narrow enclosed valley of Preveli, with a monastery at its eastern extreme, opposite to which are two picturesque ravines that give outlet to the waters from the upland districts of Palaio Lutro and Kissos.

The monastery of Preveli is thus situated in one of the most retired and picturesque vales in Crete; for crags of various forms, venerable and grey, beetle over gentle swelling slopes, olive-groved glades, and open fields and vineyards in such proximity that a stranger's first impression on viewing it is to pronounce it the paradise of Crete, and one of the most happily chosen spots for a retreat from the cares and responsibilities of life. The following is a view of the Preveli valley:—



The monastery too is clean and inviting, and the monks hospitable. I have twice visited this valley, and twice gone through the central valleys of Agios Vasiles, but each time made the journey by the bad road through the gorge of Myrto, as there is no good road through the Preveli gorges, but only over the high mountain which intervenes between this coast-valley and monastery and the upland district of Palaio Lutro. The road by the gorge of Myrto is sometimes rendered impassable by rains, being contracted to only a few yards' width at its head, where it then forms the bed of a torrent.

The neighbourhood of Preveli and the valley of Palaio Lutro are noted for some lignite beds that were

found several years ago, when the island was under the government of Mehemet Ali. When found, it was hoped that they indicated the presence of pure coal at a greater depth; some excavations were therefore made by his direction with that view, which proved a fruitless labour, as any geologist, who had only glanced at the general character of the formation of the island, would have told him on seeing the locality. They are associated with beds of sand, gravel, and dark marl of freshwater origin and of uncertain depth, and are, as I am disposed to believe, evidences (extensive although fragmentary) of a large freshwater area having surrounded the higher peaks of this island at some yet undetermined period subsequent to the miocene age, of which there are others in the eastern part of this province of Agios Vasiles.

The last good indication of the upheaval of the western half of the island is shown upon the little bluff headland on the east side of Plaka Bay, where it seemed to be not more than six or seven feet (as I was unable to measure it correctly when there, on account of the swell and surf).

It is a singular fact regarding the eparkhia of Agios Vasiles, that throughout its whole extent not any ancient city has been discovered; and yet there can be no doubt that in one or two of the most populous of these valleys there must have been a town of more or less importance. To all my inquiries, however,

in my two journeys through the greater part of the province, I could learn of no ruins or traditional site of any Hellenic city; and in passing under the hamlet of Marmara, in the large valley of Palaio Lutro, I was led to hope, from its name, that some fragments existed there that belonged to some early city near or upon the site of the hamlet; yet my guides, as well as the natives near it, assured me there were none. Notwithstanding this denial, I am induced to call the attention of any future traveller to this absence of any recognized ancient site in so large a district, whilst so many were found of which the names only were known in Selinon and other parts, and several have been noticed that yet want discovery and identification.

One of the most conspicuous features in the eparkhia of Agios Vasiles is a high square-headed mountain at its eastern extreme, called anciently Cedrius and at present Kedros; so that there is at least one name retained as a reminiscence of its ancient topography. It is a mass of limestone rising to a height of 6000 feet, and thus attains to the rank of fourth in elevation in Crete, and also of being higher than any mountain in any other island in the archipelago. It will be recognized by the reader in the bird's-eye view from Mount Ida over the western half of the island (given in the first chapter of this work), and consequently just over Kedros. That view will also convey a general idea of the mountainous character

of the eparkhia I have been describing, as well as of Retimo, occupying the northern half of this western isthmus of Crete, which the view gives in tolerable detail; and so I leave the reader to his reflections upon the scene before him and upon Crete in general, hoping that my humble narrative and descriptions may have had the happy fortune in some way to excite his interest, or to awaken in his mind scholastic reminiscences connected with one of the most classic and most important islands in the East, and with its inhabitants in the archaic times, from their having been the stage in the progress of civilization and art between the schools of Egypt and those of enlightened Greece—a progress, in regard to sculpture, from the uniform, iron-bound conventionalities of a people under the influence of the Nile's monotonous sky, valley, and delta, first rent asunder by Dædalus relieving this art from mummy rigidity, thereby giving rise to its development into that perfection of noble form and action which was attained by Phidias—and in regard to social liberty and civilization, a progress from the Pharaonic slavery and degradation of Egypt and the East, through an improved condition under the wise legislation of Minos, to the liberal laws and philosophy finally developed by Solon and Socrates.

CHAPTER XXIII.

THE ISLAND OF CLAUDA, NOW CALLED GAVDO—ITS APPEARANCE, GEOLOGY, AND GENERAL DESCRIPTION—AN ANCIENT SITE AND STATUE—A BISHOP OF CLAUDA—TRADITION AND OPINION OF ITS FORMER CONNEXION WITH CYRENE NEGATIVED BY THE DEPTH FOUND BY SOUNDING BETWEEN—INTERESTING PHYSICAL FACT OF THE GREAT DEPTH OF THE SEA PROXIMATE TO CRETE.

THE description of Crete can hardly be closed without some notice of the island of Clauda, lying directly opposite to Sfakia and its port of Lutro, since it will, in conjunction with the latter port, ever possess a special interest from the notice of them both in the events connected with St. Paul's perilous voyage and shipwreck after quitting Fair Havens, which I have very fully dwelt upon in the first two chapters of this volume. For it will be remembered that it was under the lee of this island of Clauda that the ship, after being struck or caught by the fury of the Euroclydon in endeavouring to cross the intermediate channel for the port of Phœnice, ran for temporary shelter, and the mariners, it is said, undergirded the ship, and had much difficulty in saving their boat.

The modern name of the island is Gavdo or Ghavdo, although it is strangely corrupted into Gozzo by Italian

navigators. Its general appearance from a distance is flat (having no defined peak), with whitish cliffs forming the northern and eastern parts of its coast; and it is not high as compared with Crete, although it is much higher than Malta, its altitude being nearly 1000 feet.

The south coast of the island is straight and high, forming a continuous precipice, the summit of the island being just over the cliff, from which it declines gradually to the northern shore, where it is low and rocky, with several outlying dangers; and the watershed down it in this direction has consequently channelled its surface into long parallel and deep ravines running in the direction of the dip or inclination of the strata.

These deposits much resemble the lower group of those of Malta, and seem to be identical, from the sea-eggs and sharks' teeth found in them; they correspond also with the upper series of deposits upon the Cyrene coast, which overly the nummulitic limestones there. But the southern cliffs of the island of Gavdo are composed of the unfossiliferous and unconformable brown and blue shales and schists so frequent in Crete.

Ghavdo contains about seventy families, scattered over it in three or four hamlets and farms. The property of the island generally belongs to the Sfakiots; and the inhabitants being only their tenants, are con-

sequently poor. They are primitive in their habits and ideas, and moreover are without enterprise and energy, a mixed and degenerate race; for the island having been made a place of resort by the old Levantine corsairs and Maltese cruisers during the middle ages and later times, these left their imprint strongly marked in the features and temperament of many of its inhabitants, as in Antiparos and other islets of the archipelago. And so inconsiderate was their curiosity, on the first arrival of my ship, that several swam off to her soon after anchoring, and surprised us by boarding her from the gangways and bows in a state of nudity, just like the uncivilized natives of the Pacific islands.

The island presents to the eye a rather barren, unproductive appearance, having no trees or shrubs, excepting a few karoubs in the valleys, and a sort of stunted juniper growing amidst the blown sands upon the northern shore; for the olive-tree cannot flourish upon the hills, from their entirely northern aspect rendering them exposed to the force of the frequent Luroclydon squalls during every "meltem."

There are no indentations or bays, nor any safe anchorage, except on the east side; and there it affords only a temporary shelter from a westerly gale.

Upon a flat but steep eminence terminating close over the north shore, near its north-west extreme, there is a small site with Hellenic remains, from

which I procured a finely draped but headless colossal female statue in Parian marble, a very fine specimen of Greek art, and which I soon afterwards had the gratification of presenting to the British Museum.

It had been discovered, a few years previously, by the peasants when tilling the soil; and when I saw it lying neglected upon the surface, surrounded by the daily chippings wantonly and thoughtlessly made by the shepherdboys for pastime, I was induced to remove it to save so valuable a specimen of Cretan sculpture, and, by the consent of the party in possession of the spot, was fortunately enabled to do so; otherwise it would ere long have been a disfigured block of marble, and not worth the time, trouble, and expense incurred. There must have been a temple near where the statue was found, together with the acropolis of the only ancient city in the island. From what remains, it must have been at that time a very small city, and not of sufficient importance to have its own coinage, as no coins of this island are known, and I could not learn that any had ever been found by the natives.

Yet, according to the showing of Dr. Cramer (vol. iii. p. 376), there was a Bishop of Clauda, and therefore it must have been populous and of some importance in the early days of Christianity; the island, however, is not more than five miles in length by about three in breadth; so that I think it probable

that within the see were included the inaccessible part of the Sfakian territory and coast lying opposite to it, with which, no doubt, then as now, communication by boat was frequent.

My general observations of the geology of parts of the opposite coast of Crete and of Ghavdo have shown that the latter is chiefly a fragment of what are supposed to be deposits of the miocene tertiary period, and therefore a sort of link between those deposits on the coast of Crete and on that of Cyrene; but it is apparently separated from Crete by a chasm nearly 1000 fathoms deep, and from Cyrene by a depth of upwards of 1500 fathoms.

Yet I found a tradition existing among the inhabitants that there was a submarine bank or shallow between Gavdo and Cyrene, which the well-known French traveller Sonnini having heard of accepted as a fact, and attributed the separation, with this shallow connexion between, to the abrading effect of currents. He thus divided the eastern half of the Mediterranean into two deep basins, viz. one between the Malta channel and the Cyrene or Cretan channel, and the other between the Cyrene channel and Syria.

This tradition, however, is entirely negatived by the deep soundings we have obtained off this part of Crete and between Ghavdo and Cyrene. Even at only fifteen miles to the south of the south-west extreme of Crete we found by a single sounding, but per-

fectly reliable, a depth of no less than 1950 fathoms, or nearly 12,000 feet; and in all probability this is not the deepest, being the only one taken. Thus, as the White Mountains at this end of the island are 8000 feet high, there is a submarine valley under, or rather off it, that is about 4000 feet deeper below the surface of the sea than either the White Mountains or Mount Ida are above it; therefore, if we add the height of these mountains, viz. 8000 feet, to this remarkable depth so near to the island of Crete, we have a result indicating a difference of level, between the bed of the Mediterranean here and the top of the White Mountains, of nearly 20,000 feet in a distance of about twenty-five miles, thereby giving a contour of the subaërial and submarine strata of the earth at this part of the Mediterranean almost equal in vertical dimension to that of some of the highest mountain-ranges in the world, and exceeded by few in boldness.

Another fact deserving of notice is also shown, viz. that the sea-bed inclines gradually upwards from this great depth towards the opposite coast of Cyrene; and therefore there is the interesting physical phenomenon presented of the greatest depth being proximate to the greatest elevation, as if a counterbalancing of the movements of the earth's crust had occurred where the disturbing action was greatest—that is, a subsidence or downcast to meet the uplift

produced by the volcanic and fluid protrusion beneath. This physical phenomenon I have noticed, but on a smaller scale, in several parts of the Greek archipelago. I will simply instance the following,—viz. off Mount Delphi, the highest in the Eubœa, and off the modern volcanic peninsula and mountain of Methana, in the Gulf of Ægina, proximately to each of which the sea is very much deeper than at a greater distance from it. These doubtless are examples that explain part of the causes which have formed deep lakes in the neighbourhood of high mountains, such as those of Geneva and Lago Maggiore,—the great depression in the gulf of Suda being another fact in opposition to the notion that only glacial friction and excavation could have produced such deep depressions in the land.

CONCLUDING REMARKS.

HAVING begun my description of Crete from its highest summit, I now conclude it with the notice of this interesting fact, of the proximity of so great a profundity of the sea to that high mountain. But before I leave the reader to its contemplation I will lay before him a few considerations suggested by the various facts and phenomena, organic and inorganic, connected with it. For as when pebbles are cast into a pool, and fuel into the fire, bubbles and sparks rise playfully and plentifully out of them, so will ideas arise in the philosophic and scientific mind that can be earnestly cast into a contemplation of the living things, laws, and phenomena peculiar to the deeps of the sea, as well as of those belonging to the regions of elevation on the land. Then, as it is the province or within the power of the scientific mariner alone to carry out the fathoming of the ocean-depths, to further help that contemplation, I shall briefly show in an Appendix how we effected the measurements of those deeps, and also ascertained the various rates of the superficial currents that move over the still waters of its profundity—and show also how easily some of the vestiges of organic life were brought up from the

bottom at those great depths, although, when living, most of them, if not all, sported in the upper regions of these waters, and, for the most part, are nearly as transparent as the medium they lived in. Yet these light and delicate things must have descended through all this depth to its profundity—its vastly deep bed—by the effect of their density and gravity exceeding that of every zone of the increasingly pressed waters they had to pass through in their descent.

And one of the interesting facts resulting from such a contemplation, and to my mind one of very great importance, is that of the persistence of type of some of these very minute and delicate organisms, as negatively affecting the teaching of the day, in reference to the theory of the development of all organic life from a pre-existing parent, of lower origin, by "natural selection," "transmutation of species," "development," &c., in opposition to the hallowed doctrine of "limited creation"—a doctrine largely supported too by the known facts of the distribution of species.

But the mantle of philosophy is now thrown as a shield for all speculative inquiry, no matter how fathomless from the want of clear, consecutive, or connected proof, or how disturbing to the faith of the millions by the introduction of those theories and discussions that have been recently tending to lead the public mind, or the student of nature, to believe in "missing links" that would show, *if found*, that man

was merely a developed monkey, and not a special creation; and further (for the theory has no limit), consequently reviving the old teaching of a certain school of philosophy, that "from a monad he became man,"—revived now, however, under new banners, viz. biology, chemistry, &c., some having even advanced that vital organisms have been produced under their own manipulations; but based upon fragmentary facts and analogies in the absence of direct proof; yet accepted to solve and explain the most mysterious and delicate attribute of the Creator—the vital energy—the origin of man; thus forging an endless and somewhat fortuitous chain of organic connexion and development, that is not, however, (and, as I believe, never can be) linked together in complete harmony as a whole, from its beginning to the end, by direct proof; but is joined by the shackles and swivels of assumption of the premises, where facts fail.

Or, rather, this theory of the origin of organic life may be compared to an ascending but eccentric spiral, that has no defined point of departure or clearly finite end to its development, or definite result, but that of confusion to the common mind, unsettling the faith of the millions—an ascent to a Babel. For it is not more difficult with some to believe in man as a concentrated and sudden creation of the Deity, than in the theory of an elephant being only a metamorphosed blackbeetle, &c.

I am therefore induced to refer, but more especially for the guidance of my naval readers, to a few facts and opinions recorded by eminent naturalists, who, having devoted their talents to special as well as general branches of natural history, have shown that there are facts which completely prevent their adoption of the development theory, except within very limited spheres of organisms. And I shall first bring to their notice an excellent little work, 'On the Variation of Species, with special reference to the Insecta,' by my friend, T. V. Wollaston, Esq., and dedicated to Charles Darwin—a work which shows its author's nonconformity to the newly revived theory of development.

One of the chief fields of Mr. Wollaston's researches was the Madeiras, where there are remarkable peculiarities of limited localization of species, in respect to the land shells as well as insects; and it pleases me to be able to refer to such an able and truly philosophical investigation of the facts and causes, from having observed the same peculiarity of localization of species in regard to the land shells in the island of Crete, and throughout the Greek archipelago, as in the Madeiras. The above-mentioned learned little work "was written," to quote its author's own words, "to show that we may properly accept the operation of secondary causes to a certain extent in modifying internal insect form, without rushing into

the notion that, *therefore*, they are all-important and unlimited in their action," and, concluding his interesting pages with reasonings resulting from his elaborate researches and dissections of these highly organized creatures, to show also "that the inherent elasticity of every species is strictly circumscribed," in spite of every degree of climatal condition, or local variation of food, to which it may chance to be exposed.

For my purpose I shall merely further mention one insect noticed by him of most remarkable persistency of type or form, from its being familiar to almost every child in Europe, viz. the common seven-spotted Ladybird (*Coccinella 7-punctata*), which, he tells us, *exists in nearly every portion of the Old World at most elevations, and apparently unacted upon geographically or by climate.* And whilst he proceeds to show that there are other species of *Coccinella* which have been externally modified to a most remarkable extent by some mysterious combinations of local influences, he nevertheless contends that even *they* likewise, when thoroughly understood, will be seen to be strictly limited in their respective capacities for variation.

And it is very probable that in the little persistent Ladybird too, although it shows no marked change of form, there are differences of proportion and development of some of its muscular details, if capable of

being observed and compared, relatively as great as those shown to exist, or to have existed, in the muscles and crania of man, such as the sharp-shinned Berber type, &c. Therefore how much more in its more plastic allies afterwards alluded to! Yet in *either* case the aberrations, whether outward or internal, have apparently as little tendency to alter the type of these respective Coccinellas as have the differences, more readily recognizable, in man succeeded, under the most varied conditions, in effecting any radical change of the human form.

I shall next call attention to an example of persistency of type of still higher importance to the question, viz. amongst the gigantic forms of Mammalia, and extending through a vast period of time, as well as under every degree of climatal condition which animal life is capable of enduring; and we are indebted to my friend the eminent palæontologist, geologist, and traveller, Dr. Falconer, for the fact that the Elephant, in spite of its variety of form, size, and antiquity, fossil and existing, has maintained throughout a persistency of form of its most important and most characteristic organ, *the tooth*,—even including the little pigmy species recently found fossil in Malta, and the Siberian or preglacial Mammoth. I must quote his own words. "If there is one fact which is impressed on the conviction of the observer with more force than any other, it is the persistence and uni-

formity of the characters of the molar teeth in the earliest-known Mammoth and his most modern successor. They maintain unchanged the same numerical formula of the colliculi in the successive teeth, the same great breadth of crown relatively to its length, the same condensation of the constituent materials, the same narrow, parallel-sided transverse bands in the disks of wear, the same general absence of crimping-in, and tenuity, of the enamel plates, and uniformly the same flatness of the plane of wear" (p. 38).

Again (page 72), Dr. Falconer says:—"Making due allowance for the interference of the glacial phenomena, the extremes of north and south latitude in which undoubted remains of this ancient Elephant have been found necessarily imply that his constitutional flexibility was, like that of man, capable of adaptation to very great differences of climate."

Page 73: "The same constitutional elasticity which enabled the Mammoth to endure such a variety of climates, and to spread over such a vast geographical area, necessarily extended to his alimentary habits. I have already called attention to the remarkable constancy in the specific characters of the molar teeth, alike in the preglacial and postglacial, in the extreme northern and in the extreme southern forms. Their adaptation was not special to the vegetation merely of Siberia, but general to that of every region over which the species spread; and, up to the

present time, not a plausible conjecture even has been offered as to the class of vegetable matters which they most affected."

It is necessary for me to add also the following opinion of my friend:—"The inferences which I draw from these facts are not opposed to one of the leading propositions of Darwin's theory. With him, I have no faith in the opinion that the Mammoth and other extinct elephants made their appearance suddenly, after the type in which their fossil remains are presented to us. The most rational view seems to be that they are in some shape the modified descendants of early progenitors" (p. 40). But he adds, however, in the same page, "Another reflection is equally strong in my mind—that the means which have been adduced to explain the origin of species by natural selection, or a process of variation from external influences, are inadequate to account for the phenomena." Again he says, "The whole range of the Mammalia, fossil and recent, cannot furnish a species which has had a wider geographical distribution, and at the same time passed through a longer term of time, and through more extreme changes of climatal conditions, than the Mammoth. If species are so unstable and so susceptible of mutation through such influences, why does that extinct form stand out so signally a monument of stability?"

It will be sufficient for my object and aim to make

one more reference to facts more within my own knowledge and observation, by finally recurring to the remarkable persistence of type of the little Pteropod the *Criseis*, which I have noticed in the previous chapter as found fossil in the marls of the south coast of Crete, and found also in abundance swimming in the surface zone of all the deep-water regions surrounding it, and throughout the Mediterranean, and whose glassy shells are also found in hundreds in every cupful of mud brought up from the bottom of those deep regions. I have gathered them living, by dozens at a time, with a gauze towing-net, on calm evenings from astern of my ship, or our surveying-tender, which I previously commanded, when accompanied by the much-lamented Edward Forbes, who, having then become familiar with them in all their conditions, living and dead, was enabled soon after his return to England to recognize their fossil forms, in spite of their delicacy and minuteness, so far down as the palæozoic period, the *Theca* and others being now recognized Pteropod forms found fossil in the Silurian rocks.

This remarkable persistence of type, however, is only one of many equally important examples of so low and delicate an organization, which form bars to the universal acceptance of the development or transmutation theory. I may add their companions the Foraminifera to the list; for they are likewise now

found fossil in the Laurentian rocks (the lowest deposits in which organic remains have been found), yet they, too, are found still living in the deeps of all seas.

Therefore, like the lamented genius the late Edward Forbes (whose humble disciple I am, from having had the advantage of some little research with him in some of those branches that belong to the present question), I accept the theory of "centres of creation" as most in harmony with all we know upon the question of the origin of organic life, and of Man, as the view of a highly philosophic naturalist, who possessed the advantage of deeper research in every branch of natural history, as well as power of mind for such conclusions, than most of his contemporaries. Zoology, botany, conchology, geology, palæontology were all and each mastered and comprehended in their individual spheres and combined relations in a manner that was above the reach of the general naturalist, however philosophical might be the mind of the individual botanist, zoologist, or geologist. His mind had become, when too early taken away, a vast and well-arranged storehouse of profound knowledge in all these branches, the result of extensive and patient research. It has therefore been said of him, by one who perhaps knew his powers and knowledge best, viz. the eminent Edinburgh Professor Mr. Goodsir, his fellow student, constant friend, and death-bed companion, "that his attention had never been exclusively

directed to any one of the natural sciences: he was equally a botanist, a zoologist, and a geologist from first to last."

I am therefore induced to give here some opinions of Edward Forbes, which were the result of his vast research and the philosophical powers of his mind, and which were given in lectures at the Royal Institution a few years before his death, so premature, yet no doubt so wisely ordered for great and good ends.

"Is man a member of the last organic province in time? for, if so, he need not have been the last member, and species might have appeared after him."

"Argument on this point:—The members of the present animal and vegetable population of the world are members of a centre in time, which had its point of creative maximum anterior to man's coming."

"Man's appearance a unique geological fact. Man not a member of the last centre of creation, but a unique being and concentrated act of creation, equivalent to an entire province in himself."

"That the creation of man was a final act, and the *great purpose* to which previous creations tended."

"That such a view accords with the dignity of position and moral and social stand taken by man in the world."

The lecture upon these heads followed and sprang out of a previous one given on "Generic Centres" (Life of Edward Forbes, pp. 451, 452).

Shortly before his death, however, he put forth the hypothesis of "the manifestations of the relation of polarity," in regard to the appearance of generic types, which he was led to infer to be a law that had some relation to the "grand general grouping of the substitutions that characterize the palæozoic epoch when contrasted with all after epochs considered as one, the neozoic."

In his reasonings upon this speculation or hypothesis, he says—"In the general aspect of the palæozoic world, contrasted with the worlds of life that followed, although all are evidently portions of one mighty whole, there seems to me to be something more than the contrast that depends on the loss or non-discovery of connecting links. There is more than we can explain by this theory. Granting for its support all facts capable of being so applied, there are residual phenomena to be accounted for, and which, as yet, have not been referred to any law that I know of. Doubtless a principal element of this difference lies in substitution, in the replacement of one group by another, serving the same purpose in the world's economy. . . . . Now in this substitution the replacement is not necessarily that of a lower group in the scale of organization by a higher. There is an appearance of such a law in many instances, that has led, over and over again, to erroneous doctrines about progression and development," &c.

The writer of his life, however, in quoting the report of Forbes's lecture upon this theory, remarks—"In making this hypothesis public, its author admitted that it could at that time be received as no more than a suggestion, one, however, which was based on a vast number of individual facts and a wide series of investigations, *though it has not found favour in the eyes of his contemporaries.*"

The living Owen too stands aloof from the opinions which regard man as a development from a monkey; and his predecessor, the great Cuvier, has left us this valuable record of his opinion upon this question, after the application to it of his vast research and capacious mind:—"There is no proof that all the differences which now distinguish organized beings are such as may be produced by circumstances. All that has been advanced upon this subject is hypothetical. Experience, on the contrary, appears to prove that, in the actual state of the globe, varieties are confined within rather narrow limits; and, go back as far as we may, we still find those limits the same."

Also within the last few weeks we have from the pen of M. Gratiolet, an eminent anatomist on the same side of the water, after a patient dissection of some of the pithecoid apes, in reference to "man's place in nature," the following:—"The facts upon which I insist permit me to affirm, with a conviction founded on a personal and attentive study of all

at present known, that anatomy gives no grounds for the idea, so violently defended now-a-days, of a close relationship between Man and Ape. One may invoke in vain some ancient skulls, evident monstrosities, found by chance, such as that of Neanderthal; and here and there similar forms may be found: they belong to idiots. One of them was discovered a few years ago by Dr. Binder, who, at the request of M. Macé, presented it to me. It is now in the collection belonging to the Museum. It will henceforth be counted among the elements of the great discussion on the nature of man, which now agitates philosophers and troubles consciences." In support of this view and opinion there was shown at the Bath meeting of the British Association a skull from a not very ancient graveyard in Scotland (not 300 years old), that so closely resembled the Neanderthal and Gibraltar skulls, with which it was then compared, as to indicate the existence of such types amongst existing races, as idiots or otherwise, and thus also to neutralize the previous idea of their constituting one of the "missing links" connecting man with the pithecoid animals.

The only marked difference of the Scotch skull from the Gibraltar skull, as then pointed out, was its thinness as compared to the latter, the Gibraltar skull being remarkably thick. But the great thickness of the skulls of certain tribes among the ancients

was a fact noticed in the records of some of the early battle-fields of history, and, according to Herodotus, was the result of the exposure of the head without covering, as it was a phenomenon observed only in those Egyptians or Africans who had their heads bare from their youth. For, in proof of this, he further remarks that the skulls of the Persians, who wore plenty of covering on the head from their youth, were so remarkably thin that a pebble would fracture them (book iii. chap. 12). So that no importance can be attached to that fact in the question of missing links; and the worn teeth of the Gibraltar skull seems merely to indicate habits corresponding to some in existing savage life.

The lesson we learn from these records of the ablest or most eminent men in the sciences connected with the question, and also the most philosophical and profound in general natural-history research, is that, in regard to the question of creation of genera or species in organic life, all is darkness still amongst them. It is a profound mystery, whose obscurity becomes more impenetrable when we attempt to solve it by the application of mere speculation or hypothesis founded only on some isolated phenomena that have been discovered to occur in some minute portion of creation. Therefore, opinions being so conflicting amongst the philosophers themselves who venture to form theories upon this obscure and super-

human question, there are others who are satisfied to view all creation, whether living or mere matter, organic or inorganic, as a mystery, yet forming a pyramid of concentric zones composed of distinct but harmonizing circles; and surmounting all, and as the final aim of all, is Man—but alone, and not in affinity with beast or Gorilla. For as one star is distinct from another star, the planet from its satellite, and the comet from the nebula, and as the stately oak differs from the creeping vine, so they see erect and reasoning man as "a unique being and concentrated act of creation." They see, too, that all (whether rocks and metals, seas and winds, or animal and vegetable life) was so created and arranged in preparation for man's use and convenience as he developed in numbers and advanced in civilization, that he might obtain new powers and conveniences with his advancing requirements—each creation being adapted to each advancing step or condition of that preparation.

And then, above that pyramid of creation, they feel and see, from the several unmistakeably *distinct* and distinctly created bodies and systems that are there, a Power—a creative Power—the All of All—the Creator of each distinct zone of the earthly sphere and step of the organic pyramid, as of each distinct body and system in the heavenly universe. But they perceive also an incomprehensible power, an unfathomable mystery, and the more profoundly mysterious the

more it is attempted to be penetrated and understood by human perceptions and experiences, but the more sensibly true in consequence; for order, as the indication of design, is observable in all, however incomprehensible—in nebulæ as in the stars; for even some nebulæ are now discovered to have persistent, repeated, as well as peculiar forms, no matter how different or distant apart from each other or from us, or anomalous in their characters. Some that I have recently seen through the powerful telescope of my friend Mr. Lassels, at Malta, forming a portion of the many discovered by him, repeat a divisional band or black line through them; others again indicate a spiral form, indicative of another law peculiar to them, yet repeated in several in a more or less marked degree.

It is natural with some zealous philosophers to desire to be in advance of the discoveries of their time; but, in views connected with unattainable and superhuman speculation on such intricate and deeply hidden questions, others avoid such captivating aspirations, with only the Icarian wings of probability or possibility to soar with, and prefer to keep pace with *well-ascertained facts*, not with analogies and limited developments—however logical the biological doctrines may seem which go to bring forth man from sea-scum, and this ocean's froth from entity and ether*, by heat, electricity, polarity, &c., and which thus

* Oken's 'Physiophilosophy.'

resolve him, with all his intelligence, into an elevated monkey.

A learned professor now living, has said, however, in support of his peculiar view that language, as well as man, was a distinct creation, and that therefore language forms the distinctive point between man and animals, that, "ever since Horace, it has been usual to compare the growth of language with the growth of trees; but comparisons are treacherous things. What do we know of the real causes of the growth of a tree? *and what can we gain by comparing things which we do not quite understand with things of which we know still less?*" (Max Müller, Lecture on Language, p. 39.)

And this reasoning of the learned professor is as fully apposite to the whole question as to a part. The law of gravitation cannot be made applicable to the whole universe; no more can specific variations and developments be universally applied to, or proved to be the original and natural law of, the whole of the organic changes in creation, without some such assumptions and premises as the following, from a work above quoted, that has enlarged upon this subject, and been recently translated into our own language, and published by the Ray Society for the benefit of rising students of natural history:—"*All life is from the sea: the primary mucus out of which everything organic has been created is the sea-mucus. All mucus*

is endowed with life. The whole sea is alive. Man is a child of the warm and shallow parts of the sea: love arose out of the sea-foam."

Such are some of the fundamental doctrines in support of the theories and hypotheses of the day regarding creation (and of the origin of man also, as a pithecoid development!), under the philosophic terms organogeny, biology, physiophilosophy, &c.! (See Oken's 'Physiophilosophy': Ray Society.)

He that can believe, however, that John spoke what he knew to be true when he said, "Out of these stones God is able to raise up seed unto Abraham" (Matt. iii. 9, Luke iii. 8), can be satisfied with the doctrine and idea of distinct creations as recorded by the inspired Moses, without requiring to know the *modus operandi*, or a rational explanation by theories and speculations that cannot be wholly proved, and which therefore cannot be more satisfactory than the acceptance of creation as a profound mystery—the sole work of a Creator—known only to God.

Also, who can reach by rational philosophy the miracle of the feeding of the five thousand? or who can boldly reject as unworthy of faith this miracle? or the words of our Saviour in reference to Jonah, so distinctly recorded by St. Matthew?

Some apology is perhaps necessary for introducing such scriptural references; but I trust that my motive

and feeling will not be misunderstood. Nevertheless for the sake of the many rising students of natural history, especially in my own profession, who have not had the same advantages of observation and research as myself into some of the facts and phenomena of nature, as well as of studying the opinions of our greatest naturalist of this age, I am induced to touch upon them in all their bearings, in reference to conscience and faith in the inspired record handed down for our guidance, as well as in reference to the darkness and disaccord that exist amongst the philosophers of the day who doubt that record where unexplainable by reason. But all life is a mystery. The creed of the true Christian is a mystery.

Therefore the concentric pyramid, with distinct spheres and centres of creation, is the Mount Ida of philosophy to my mind, when I venture to ascend into the regions of speculation upon creation and instinct, &c. &c.; for the origin of each belongs to the same great mystery and power as the stars, comets, and nebulæ of the heavens; and the origin of the latter is as inexplicable and undefinable by the mathematician and astronomer as the former by the comparative anatomist and naturalist.

Besides, who can define, satisfactorily to all minds, instinct and reason, or wherein they differ, and their exact point of departure? The Beaver builds his house, the Tailorbird sews its leafy nest, and the Trap-

door Spider its silken cell, secured by an ingeniously hinged door; then the great Pelican and little winged Quail migrate on the approach of winter and before food begins to fail—indeed, when it is most abundant in some cases; whilst the Ant and Bee store their food at home to meet it; and the defenceless Dormouse then also cunningly secures himself for his long sleep, against natural enemies and external cold. What prompts each to do this in the first year of life? Certainly not tuition, nor experience, but natural instinct only.

Man, however, will do all this likewise, if experience and reason prove it necessary; but man has a reason and power far beyond such as is necessary for his bodily requirements. He can imitate the instinctive labours of animals, and moreover he can, out of invisible elements create, and control at will, powers suited to his own wants and desires.

Thus the reason of man is a *creative reason*, and, being so, it is apparently a direct attribute of the Deity; for great machines and powers are discovered and called into active existence—*invented*, as it is commonly termed, by man investigating nature's laws, and searching into natural but hidden elements and powers.

It is then this inventive or *creative* faculty that, to my mind, constitutes the wide difference between the simple and limited instincts of animals, and the

intelligence or reason of man, rather than *the power of speech* or *the possession of a language*, as some imagine. These are the mere vehicles of his intelligence; for it cannot be doubted that, when God created man, language was also given to him, as He afterwards gave to the apostles the gift of all known languages for gospel ends.

Believing this to be true (as every believer in inspiration, or true Christian, must), the creation or gift of an original language cannot be doubted, any more than that of man, as a sudden and concentrated act of omnipotence, as the inspired authority has stated it. The passage is clear and precise, and involves no question or doubt, as others do which refer to an indefinite time, period, or age, therefore possibly permitting a higher antiquity to be assigned to man than that indicated by the received chronology, and according, too, with the inferences that may fairly be drawn from the recent discoveries of human implements in caves and gravel beds, but not with the vast antiquity some are disposed to infer.

For there is so much that is anomalous and dubious in the phenomena of bone-caves and gravel beds in which human remains or implements are found, from the absence of tranquil sequence in the latter, and from our want of knowledge of the effects of the infiltration of water through the roofs and walls, and of streams along the plastic floors of bone-caves, that

the finding in them of pottery and flint implements with the bones of extinct animals is no sure proof of their enormous antiquity; for the limits of the existence of many of these are by no means defined, but appear to be brought nearer to us by every new discovery.

Also the recently discovered implements made of reindeer-horns and bones in the bone-caves of southern France, that display both high intelligence and even some approach to artistic taste in the ornamentation of the handles of the rude implements used by those early people who inhabited Europe when these animals also roamed over it, although they indicate a rude and primitive state of social life like that of the Indian hunter at present, yet afford no proof of such great antiquity for these cave-inhabiting people; moreover (and this is of more importance in the question under consideration) they indicate no such approach to the degraded and brute intelligence of the ape as is required to constitute the "missing links," the lower types of early man, which are sought for and believed in by some naturalists of the Oken school of philosophy in order to prove his pithecoid descent.

Some of the flint implements also from the Swiss lake villages, which I have seen in the possession of M. Troyon at Lausanne, display surprising skill in their manufacture and ornamentation, which, con-

sidering the rude instruments they must have been made with, shows a masterly handicraft and intelligence no way inferior to the skilled artisan of to-day. These discoveries, therefore, show that human intelligence was not less in remote antiquity than it is now; and they also tend to show that the reindeer was living in Europe at a later period than was previously supposed, as also do the daily discovered facts regarding the extinct mammalia appear to tend to bring some of them nearer our own time,—that is, where the evidences of their association are sufficiently clear and reliable; for the nature of the fissures and débris of the bone-caves, and the length of their possible existence as the retreats for animals of more than one geological period, and the unknown action of the inundations that may have reached them, or the springs that have flowed through them, in general render very suspicious the inference of the very high antiquity of the human implements or relics found in apparent association with some of these extinct animal remains. Therefore, whilst theologians allow the possibility of carrying the creation of man further back in time than what a modernly assumed but now generally admitted to be unreliable calculation had determined, the daily discoveries regarding man's earliest and widely detached locations, and the indications of the association of some of the extinct animals with man, seem to permit the bringing them nearer our own time, and regarding

the gravel débris with human implements as having been deposited long subsequently to the gravel débris of the glacial period. Therefore, to my mind, they fairly raise the question whether a few thousand years might not really have effected most, if not the whole, of the phenomena connected with the disturbed gravels and surface débris in which human implements occur, since they all seem to be the result of some great and apparently *sudden water-action* that swept the adjacent surfaces, and transported them along with the gravels into the hollows or bays flanking the low hills upon which they are found so confusedly mingled together.

For the ancient traditions and records of physical phenomena that have occurred, of great importance, and at very limited distances of time, such as that of the great Deucalionic deluge, fixed at about 1500 B.C., as also the subsidence of a great tract of land called the Atlantis, but at an unknown period and uncertain place, together with the rising up, within more recent times, of the high mountain of Methana within the gulf of Ægina (to a height of seven stadia, according to Strabo), and also the disappearance of an island near Lemnos (which now forms an extensive bank there), prove that sudden or unusual upheavals and downcasts of large areas have occurred within no such great distance of time; and their magnitude and effect is shown by the absence of all tradition regard-

ing the upheavals and downcasts which have occurred in Crete since the Roman period, amidst comparatively populous communities, and notwithstanding their evident effect upon some of the cities that stood upon its shore, whilst the impressions produced by the former cataclysms of Deucalion and Atlantis were so strong that the remembrance of them, vividly retained amongst the thinly scattered and rude cave-inhabiting people who preceded the Greeks, induced both the early and the later historians of the latter to record them.

Therefore, without referring to the Mosaic record of the deluge of Noah and the indications of the great subsidences and re-elevations of land that attended that circumstantially recorded cataclysm, as well as the downpouring of rain, there is undoubtedly, to my mind, evidence of great catastrophes having occurred within a few thousand years prior to history, that must have swept away some of the settlements of those early men (especially as, in their earliest locations, they naturally followed the lower lakes and the courses of rivers, as is also shown by the recent discoveries as to the situations inhabited by man during the stone period), as well as some of the animals that have become extinct and are found in association with human relics. Hence we are led to consider all the *possible* conditions that may have resulted in the gathering together of gravel-débris with human implements in them, even such as those of the valley of

the Somme, and to hesitate before ascribing to them such a great antiquity as was at first inferred, by many, from the slow sequence of such events since the historical period; for waves of translation connected with a downcast and then a return to the same or nearly the same level as previously existed would place these confused beds of gravel and earthy sand, with human implements and with both marine and river shells, precisely as they are here intermixed, and precisely where they exist—without dispersing them generally and, necessarily, in the centre of the valley, or excavating out of it any pre-existing peat bed or delta soil.

But, to return to the question of language, let us consider it in another point of view. Can it be doubted that the offspring of deaf-and-dumb parents would form a language of communication, if accident or design separated them from the rest of mankind, and if born *with hearing*, so as to enable them to become familiar with sounds they could themselves utter and imitate—with the sounds of rushing and running waters, the rustling of the trees, the whisperings of the winds, or the varied cries of animals? For even the untutored dumb have a language—the language of signs, which soon become intelligible to those in constant association with them. So have animals their signs and cries of communication. Thus it seems to me that language falls short of being the most distinctive

difference between instinct and reason, as also we fall short in being able clearly to define between animal and vegetable life in the lower orders and linkings between zoophytes and sea-plants; for that is not a clearly solved question with those who have had the best opportunities of studying and examining it.

Where, then, can the progressive-development theory be limited when the links are apparently so close and undefinable between the animal and vegetable life, between the vital and the mere physical, between the fitful vitality and circulation from external excitation by tidal movements and currents, by spasmodic or ciliary action, or by the sensitive power which both zoophytes and some plants indicate, but of the exact nature of which the profoundest physiologist is ignorant,—magnetism, electricity, galvanism, polarization, heat, all and each, in some degree, having some affinity or connexion with the organic energy, as well as in the physical excitation that produces growth and development, yet all held under control for special ends? but by what power? That is the unreachable question, too, that sums up the whole. Yet there are some who, whilst they admit that they cannot pass this breach, or those of the persistency of certain types, leap the deeper and wider gulf of darkness, and say, "I cannot accept creations; it is unreasonable to do so; 'development' is my theory." Thus the rising student of nature is taught to reject this

mystery of original creation with his earliest footsteps in the researches of geology or natural history, because his teachers look for rationality in all nature, and therefore cannot believe in it; and as they cannot believe in one mystery, they cannot believe in another; and thus he early falters in his faith if he proceeds in his study, or else rejects a beautiful science and health-giving pursuit.

Having then myself rejoiced much in this research, I will quote, for the benefit of the rising student, one more passage from the latest thoughts and writings of the lamented Forbes, which he will find highly worthy of his consideration, as emanating from a mind stored and balanced in respect to such questions—I fear, beyond the reasonable hope of seeing his like for some generations at least: and I should like to see the passage in letters of gold in every room devoted to lectures on natural philosophy. For by his genius he held together, more than any one of his time or subsequently, the bonds of accord both in the common intercourse of scientific inquiry and research, and in the theories that might rightly be accepted from the limited facts that daily resulted from that research. His power and genius were shown too in his very triflings, and in the playful effusions of his brain, since they invariably tended to render the details of natural-history research an amusing rather than a dry pursuit, and with that complete

success amongst his fellows that only rightly governed philosophy could accomplish. For poetry was mingled with sound and safe philosophy and profound penetration even in the playful productions of his mind, which in consequence had always a charm to captivate and encourage. Hence his universal influence over his scientific cotemporaries; and hence, too, the claim to reverence and acceptance of his last leading opinions and ideas, especially such as the following:—

"Some of these questions may be clearly and fairly solved; some of them may be theoretically or hypothetically accounted for; some are beyond all the subtlety of human intellect to unriddle. I cannot resolve in my mind the many queries which the consideration of the most insignificant of organized creatures, whether animal or vegetable, suggests, without feeling that the rejection of a mystery, because it *is* a mystery, is the most besotted form of human pride." (Nat. Hist. Europ. Seas, p. 13.)

But, in furtherance of my own views and feelings, I am induced to add that to my mind there is still another characteristic difference, a psychical and more important distinction, between man and animals, beyond that of language, or the creative power of reason (no matter how closely the naturalist may link the physical structures of man and monkey), viz. the consciousness of a supernatural power, which is

shown in some way by all the human race. For a conception of a Deity is common to all, superstitious and varied though it be; which conception is the indication of a natural religion, since all in some way show a regard for their dead or a fear of their departed spirits. This superstition, therefore, indicates a natural consciousness of a spiritual state and of a Supreme Being—of God.

This to my mind, then, clearly indicates the difference of origin between man and animals—as do also man's creative powers, in the fact of those powers being a sign of his direct relationship to the Omnipotent—to the Creator of his intelligence.

And thus, as the heavenly bodies are abruptly distinct as objects and creations, although so similar in form, so may man be also *as* distinct (as a creation), instead of a mere development of a lower predecessor: and as we are taught by inspired writing that he was a distinct creation, it is more reasonable to believe that he was, than to accept a theory which necessitates a fruitless search for "missing links," and the sole proof of which consists of analogies and induction founded upon isolated facts and assumptions.

For creation in all its subtleties cannot ever be explained by man, but by God; and the vain effort to attain to an explanation even of the origin of man seems, in my humble opinion (with all due deference to those who pursue it), to tend to weaken that

exalted perception of the Creator, the Omnipotent, intended in the teaching of the Old and New Testaments, even though the most amiable language be employed in support of rationalistic views of the *modus operandi*, and in support of individual theories, and in spite also of endeavours to show their fitness or their consistency with the right understanding and vindication of the wisdom and power of the Deity.

Some, therefore, to meet the power they feel necessary to ascribe to the Creator, and the evident deficiency of the development theory, conjecture that creation means "unusual berths," not progressive developments and closely connected types, and that the origin of distinct species arose out of the "struggle for existence," and from certain of these anomalies overcoming the others by their superior capability of endurance in the battle for life.

But although this conjecture or theory seems in a certain degree to be satisfactory to those who insist upon rational science, yet it is still without proof. Moreover it involves such fortuitous conditions that to some minds it is not a bit more satisfactory than the acceptance of creation and the origin of man as mysteries, or the waiting for positive proof (instead of conjecture) of his pithecoid descent, if such is ever intended or necessary to be known for the sake of philosophy.

I am bold to assert, too, that I am one of those who

see no parallel between the case of Galileo and that of those who accept either the Darwinian or the Oken doctrine; for the deductions showing the earth's revolution round the sun were demonstrable to all, a mathematical problem as mentally tangible and convincing as the proof, arising from observation by means of the telescope, of the existence of nebulæ and of Jupiter's satellites. Not so, however, the *conjectures* regarding man's development from a monkey. And as true philosophy evidently, as accepted by the great philosophic minds of Cuvier and Forbes, lies more within the region of proof than conjecture, especially when applied to that mystery of mysteries the origin of life and creations, I believe it to be wise to reject conjecture and await undoubted proof.

And as every one, too, when he has begun life with his discretion and reason on the alert, adopts some maxims as cardinal points to steer by, and as one of mine has been the fear of depriving *faith* of its influence and power in questions seriously affecting it, like this, I have endeavoured to avoid the quicksands of speculation and superfluous philosophy, and have preferred, and still prefer, simply to gather and follow scientific facts in preference to such speculation, since the profoundest philosophers and naturalists, as I have shown by their recorded opinions, cannot reach beyond an hypothesis; for the foundation is more analogy than proof, the path of ascent more induc-

tion than fact, and the height finally reached the summit of pure conjecture, but with the word *danger* clearly engraved within its halo, as is very clearly indicated by the manner in which its advocates themselves touch upon and treat it.

Yet philosophy in all branches of science is no doubt legitimate; but as an over-zealous philosophy has thus its dangers, with its depths and mysteries, so it has, to my humble view, its bounds also.

And now I bid reader and Cretan, mountain and deep, a pleasing yet somewhat reluctant farewell, from the interest which the various incidents we have passed in review have awakened. "Mountains never meet; men may," says the oriental proverb. Recorded opinions and reflections, however, frequently do meet—for good or for evil. Therefore, as mine in these pages, and resulting from these associations, may meet with men and minds both in accord and in disaccord with them, I bow with all deference to those who dissent; for as none are given in any other spirit than that of goodwill and good intent, I shall silently accept theirs as also given in the same mood and for the same end.

APPENDIX.

I.—ON DEEP-SEA SOUNDINGS.

Most investigations that are connected with experimental research are the more satisfactory and complete, and the more perfect in their results, the more simple the operations by which they are conducted; but it appears to be a perversity of the human intellect almost invariably at first to conceive and try the more difficult instead of the more simple way of doing everything, and thus often to embarrass, if not entirely defeat, the aim desired, by its own inherent defects and complex manipulation.

Sounding the ocean deeps has been an instance of this kind; for the sea's profundity had in general been tried to be reached and measured, in most of the earlier efforts, by rude and unmanageable means, but which were the natural first thoughts in regard to the way of making the trials,—viz. either with too ponderous weights and with too thick lines, or with too light weights, that bore no relative proportion to the size, length, and weight of the line—such as a pig of ballast and rough, knotted spun yarn, or a line increasing in thickness with the length paid out, which consequently often parted near the sinker on reaching great depths (that is, when the frictional resistance encountered by the line above and the weight and impetus of the sinker, acting in opposite directions, exceeded the strain the line was capable of bearing).

In these early trials the effect of the enormous friction of a great length of line, when descending, or being dragged up-

wards through the water, was overlooked, or was mistaken for the effect of pressure; and thus, when the line was supposed, from the slow rate of its running out, to have reached the bottom, the frictional resistance then offered along the two or three miles of rough line or spun yarn (as it might happen to be) that had run out was, when felt in the endeavour to haul the line up again, generally *mistaken for the resistance or hold of the sinker in the sea-bed at the bottom.*

Others, again, seeing something of the difficulty arising from friction, adopted wire (on account of its smooth surface) as a substitute for rope, overlooking the fact that, although the evil of friction, if not avoided, was diminished to a minimum, another evil of greater import was substituted, viz. that finally resulting from the *weight of the wire itself*; for as, from the greater specific gravity of the wire, the weight run out soon exceeded the weight of the lead or sinker sent down, the influence of the latter became absorbed or disappeared in the overweight of wire, and therefore could not be felt.

Thus it was impossible to know by the feel, or by the ratio of time of running out, after the weight of line had exceeded the weight of the sinker, when the bottom was reached. Moreover these difficulties or obscurities in the results were much increased by the uncertainty which existed in respect to the probable depths of the sea where the experiments were being made, since the ocean had been supposed to be generally very much deeper than what it has been really found to be. Thus, when it is known by the persons who now carry out these delicate trials, that there is every probability of the depth not exceeding 3000 fathoms, instead of some 5000 or 6000, or even more, as was supposed by the first deep-sea sounders, the difficulties and anxieties experienced during those earlier endeavours to carry out these experiments, and

the many accidents or incidents that would tend to confuse and conflict with the right comprehension of the results, can be well understood.

But success nevertheless frequently crowned the efforts of the early scientific navigators and surveyors in their several plans and ways of fathoming the deeps, and of none more than Admiral Smyth and Sir John and Sir James Ross, whose success and failures have thus in part been our guide and experience in arriving at the simple plan now adopted by myself and some others. We therefore owe much, to the early surveyors and scientific navigators who first made these trials, for the success which has attended the more recent, and to our Arctic explorers generally and our scientific brethren in the American navy also, whose accomplishment of the first complete line of soundings across the Atlantic has been so fascinatingly recorded by their own Maury.

The plan, therefore, I first found successful, in the great depths of 2000 fathoms and over, was that of using a fine silk line, not exceeding the size of an ordinary trout-line or whipcord, so as to have the least possible friction and weight, with the greatest strength.

And when I relate that I thus on a few occasions obtained correct soundings in depths of 2000 fathoms with a sinker of not more than 10 or 12 lbs. weight, and also subsequently with the common seine-twine used for making nets or for sewing sails, and with a reel not larger than a log-reel, the reader will see that simplicity and economy have both been reached; for a man or even a boy can hold or attend the reel during the time of running out. I have found also that the experiment is always best made from a boat, to ensure both facility and greater accuracy,—because a ship's drift from leeway and superficial current will almost always vitiate the results in great depths that require half an hour or more, unless made during

a dead calm and with no swell, for no sea is without a superficial current during a breeze.

In 1857 I gave, in a report to the Admiralty, and afterwards published in the 'Nautical Magazine,' the following as a summary of my views and experience regarding deep-sea soundings:—

1st. That soundings are best obtained in the greater depths of the sea with a very fine but strong-made line, either silk or fine twine, instead of a very thick one, so as to encounter the least possible frictional resistance in descending; and that it should be as near the specific gravity of water as possible, so as to add as little as possible to the weight of the sinker sent down.

2nd. That the sinker should in great depths be always *attached to the line* instead of being (as it was previously) used with a detaching instrument, so that the fact of the sinker being actually at the bottom (instead of the line having parted, as might occur) may be ascertained by weighing or feeling the strain, which can be done either with a spring "steelyard," for greater accuracy, or, in some cases, by hand.

3rd. That this plan enabled the rate and direction of the superficial and under current also, if any existed, to be ascertained, at each sounding or occasionally as needed—by attaching a float or buoy to the line when the sinker had so reached the bottom, and by measuring with the common log the speed of the current as it ran past the float, which, it will be perceived, can be done by simply keeping the boat abreast of the float, on a certain bearing and distance, during the trial, and thus as stationary in regard to position over the bottom as the float itself thus actually moored to it in the depths of perhaps 2000 or 3000 fathoms.

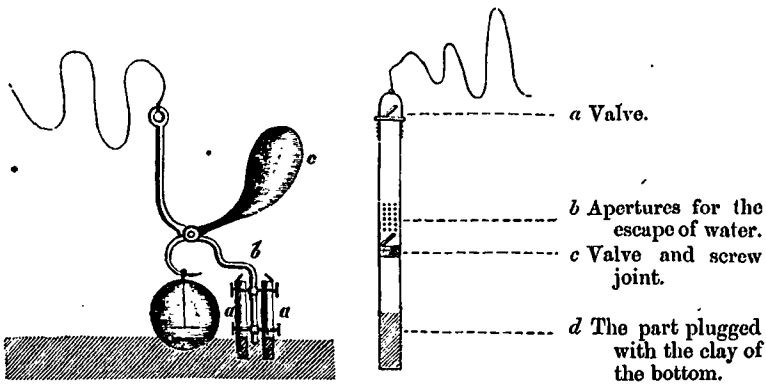
4th. That the procuring of specimens of the bottom should in consequence be an operation independent of that of sounding, and effected with a thicker line than that used for ascer-

taining the depth, to bear the strain of hauling it back again, and consequently that this operation should be made from the ship at the same time the sounding is being carried on in the boat, and without reference to ascertaining the depth by this means also (as the apparatus for bringing up the bottom should be of very light weight, so as to offer little resistance when being hauled back to the surface); consequently 300 or 400 fathoms more line than the actual depth recorded by the boat's soundings should be paid out, to ensure the bottom being reached by it, since, from the lightness of the sinker, it would not be felt when actually down.

The apparatus also which I have found the most simple and convenient for obtaining bottom is a piece of leaden pipe, or any other plain tube of small diameter, provided with a flat valve at the top, to open and shut on its descent and ascent; for I have found, after using many different plans, this to be the most simple means for bringing up bottom in very great depths, from the little resistance the apparatus meets both in its descent and return to the surface again; for the soft mud or clay which experience has taught us usually exists in all great depths will invariably plug the lower part of the tube to the height of two or three inches on its reaching the bottom, if the valve acts freely and allows the water to escape to make room for the clay; and I have found that this plug will also remain until it reaches the surface again, without being washed out, if the valve on the top of the tube remains closed during its return. But to prevent this pellet of mud from being forced out by the weight of the column of water above it, and lost, when being *raised above the surface*, a screw joint and central valve may be made in the lower part of the tube; or, what is more simple, a few holes or a narrow slit cut in the side of the tube would allow the water to escape as soon as the upper part rose above the surface.

The screw joint and valve, however, have the double advantage of at the same time bringing up a quantity of water for testing its density, &c., and relieving the pellet of clay in the bottom from the weight of the column of water above. See fig. 1 of the accompanying cut.

Fig. 2. Fig. 1.



a, small tubes, with valve at top of each.

b, arm upon which the tubes are capable of sliding up or down, so as to be lengthened or shortened, according to the SIZE of shot used.

c, weighted arm, to drop and cause the shot to unhook as soon as it reaches the bottom.

When large quantities are required, and the weather is sufficiently calm, the deep-sea clam, known as the "Bulldog sounding-machine" is the best yet invented; but it is so ponderous, and requires such a very stout line to ensure its return from great depths, that specially fitted machinery on deck is necessary with its use, to meet the great strain and resistance offered by the line and apparatus.

Therefore the simple tube, as above described, will in general be found the more convenient means of procuring a portion of the bottom from great depths; and if every ship of war were supplied with a few, or made them from a common leaden pipe of not more than one inch in diameter and from two to three feet in length, so as to be of sufficient weight to

sink the line rapidly and overcome its friction, and were also supplied with 5000 or 6000 fathoms of cod- or mackerel-line to use with it, and from 50,000 to 100,000 fathoms of twine such as that made at my request by Messrs. Newall & Co., and if the captains had orders to take all convenient opportunities, during their voyages, to ascertain the ocean depths and the nature of the bottom by the double operation recommended, we should in a few years make considerable progress in the acquisition of that knowledge of the larger portion of the sea-bed which is so important a desideratum for the interests of navigation, telegraphy, and science; for, with well-made, easily turning reels for the twine, a little patience, and practice, the operation, if attempted only when the weather was calm, would soon become interesting to officers and men, from the success which would be sure to crown their efforts. The twine should be kept headed up in casks during the voyage, until required for use, so as to preserve it from damp and rats, and to ensure its strength throughout remaining unimpaired, about 10,000 fathoms being sufficient to keep marked and upon the reels. And the best mark is a piece of narrow white tape placed at every 50 fathoms, which is the most convenient interval for the calculation of the time of running out and the quantity run out.

I here give a description of a sounding-clip which I found very handy in depths from 500 fathoms to 1500 fathoms, when it was not convenient to lower a boat and the ship could be kept stationary, although there was a swell and light air at the time (see fig. 2, opposite page), as it affords the means of detaching the sinker and bringing up an *indication* of the bottom, with the recovery of the line; but its success depends upon the hook of the clip being only slightly bent upwards, and upon the iron ring attached to the spun yarn slinging the shot being made smooth, so as to slip off easily

when the weighted arm, *c*, drops, on the shot being landed upon the bottom. The shot also should, when suspended, be only just above the level of the tubes *a a*, which are made to move up and down the rod *b* for that purpose, according as a 32 or 68 pounder is the one used. The line should also always be eased down for the first 50 fathoms, before it is allowed to run of its own accord, as in all cases when sounding with the twine; but the latter should be doubled that length, or at least for the first 20 fathoms, to meet the strain of accidental sudden jerks.

The two sliding-tubes, *a a*, may also be modified, by one of them being replaced by a solid piece of lead of a little larger diameter than the tube; and, in lieu of a socket at the bottom for the insertion of the arming, I have found a piece of white yarn rolled round, like the crownpiece of a straw hat, and covered with grease, to answer better, as it can be easily secured to the lead before descending, and entangles the fragments of the bottom better, should it be rocky or hard instead of the soft clay usual in depths below 200 or 300 fathoms, which the hollow tube would show. This little *specimen-mat* also better ensures its preservation for registry and future examination; for with such a bottom, and even with hard sand, the Bulldog clam and the sounding-tube both fail to bring up any indication of the ground they have reached.

The following examples of deep soundings obtained by common sewing-twine only, and weights of only 8 lbs. and 13 lbs., are here given to show what can be done by so simple a means under favourable conditions of weather and sea. But a silk line of the same size, and with double the weight, or a line of the strength and make of whipcord or a fishing-line, with a proportionately heavier sinker, would doubtless accomplish the same with greater rapidity; for as these experiments succeeded so perfectly with me in very calm weather,

and with a rough spun twine like that used for sewing canvas, it is evident that a line of silk, or one of the same material as the above-mentioned seine- or sewing-twine, but of better make and size, to ensure greater strength and smoothness, must answer better, offering less friction, being capable of bearing a heavier sinker, consequently having a greater rapidity of descent without risk of breaking, and possessing *more uniformity of strength* than a line so fine and rough as simple seine- or sewing-twine.

Our first successful soundings in depths of 2000 fathoms were obtained between Malta and Crete, in 1856, with silk lines no thicker than those used for trout and salmon, the details of which I give first, since they were made under all the difficulties and uncertainty in regard to the probable depth, and to the exact indications of the line being broken or the bottom being reached:—

Three Soundings with silk line, between Malta and Crete.

May 20th, 1856.—Tuesday, at 8 A.M., lat. 31° 57′ N., long. 15° 52′ E., sounded with fine silk line of the size of salmon-line, such as is used in the Levant for making fishing-nets, and capable of bearing 40 lbs. A lead weighing 22 lbs. was then attached for a sinker, Bonicci's sounding-clip * being also attached at about 10 fathoms above the lead, and the line reeled up on a simple log-reel that turned freely on its wooden axle.

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.	Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
Let go at	8	24	47			650	8	36	54	0	55
100	8	28	38	3	51	700	8	37	52	0	58
150	8	29	10	0	32	750	8	38	51	0	59
200	8	29	42	0	32	800	8	40	0	1	9
250	8	30	21	0	39	850	8	41	18	1	18
300	8	31	1	0	40	900	8	42	32	1	14
350	8	31	46	0	45	950	8	44	18	1	46
400	8	32	32	0	46	1000	8	45	47	1	29
450	8	33	20	0	48	1050	8	47	8	1	21
500	8	34	11	0	51	1100	8	48	31	1	23
550	8	35	6	0	55	1150	8	49	59	1	28
600	8	35	59	0	53	1200	8	51	26	1	27

* An ingenious device of the blacksmith of the 'Medina,' C. Bonicci, a native of Malta. It consisted of a double hook with weighted arms. Sometimes very successful.

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
1250	8	53	0	1	34
1300	8	54	9	1	9
1350	8	55	47	1	38
1400	8	57	30	1	43
1450	8	58	56	1	26
1500	9	0	36	1	40
1550	9	2	30	1	54
1600	9	4	11	1	41
1650	9	5	58	1	47
1700	9	7	36	1	38
1750	9	9	10	1	34
1800	9	10	59	1	49
1850	9	12	45	1	46
1900	9	14	42	1	57
1950	9	18	58	4	16*

The depth found was thus apparently between 1900 and 1950 fathoms, or about 1920 fathoms. The line broke in hauling it back, as the claws did not act to detach the weight, as was then desired.

May 20th, 4 P.M.—Sounded again with silk line the same as above, and with a lead weighing 21 lbs., to test the accuracy of the former sounding, supposing the weight to have been down when the line began to go so slowly.

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
Let go at	4	0	0		
70	4	8	56	8	56
120	4	9	22	0	26
170	4	9	52	0	30
220	4	10	28	0	36
270	4	11	10	0	42
320	4	11	57	0	47
370	4	12	47	0	50
420	4	13	45	0	58
470	4	14	48	1	3
520	4	15	56	1	8
570	4	17	9	1	13
620	4	18	20	1	11
670	4	19	34	1	14
720	4	20	50	1	16
770	4	22	18	1	28
820	4	23	40	1	22
870	4	25	7	1	27
920	4	26	43	1	36
970	4	28	25	1	42
1020	4	30	7	1	42
1070	4	32	0	1	53
1120 †	4	34	58	2	58
1170 †	4	35	30	0	32
1220	4	37	0	1	30
1270 ‡	missed.				
1320 ‡	4	42	10	5	10
1370 §	4	45	55	3	45
1420 §	4	47	53	1	58
1470	4	49	47	1	54
1520	4	51	42	1	55
1570	4	53	40	1	58
1620	4	55	58	2	18
1670	4	58	5	2	7
1720	5	0	33	2	28
1770	5	2	35	2	2
1820	5	4	42	2	7
1870	5	6	58	2	16‖

Therefore 1870+40=1910 fathoms as about the true depth.

This sounding having been made in the same place as the former, for verification, their agreement was remarkable, and proved the practicability of the plan, and the correctness of the former sounding, since both lines, being similar but of less weight, could not have parted at the same distance from the surface.

* Going so very slowly that it appeared to be down, or had parted.

† 40 fathoms too much shown.

‡ 50 fathoms too little shown, by joining on of some remnants.

§ 50 fathoms too little, from same cause. ‖ Apparently down.

May 21st, 9 A.M.—Attached 150 fathoms of small silk line, capable of bearing 20 lbs. fully, to a hand-lead of 14 lbs., with bottom flattened to twice its diameter, to retard descent. The larger silk line, capable of bearing 40 lbs., was then attached without Bonicci's claw, so to break the small line instead when down.

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
50	9	18	5		
100	9	18	40	0	35
150	9	19	7	0	27
200	9	19	45	0	38
250	9	20	35	0	50
300	9	21	25	0	50
350	9	22	17	0	52
400	9	23	13	0	56
450	9	24	15	1	2
500	9	25	15	1	0
550	9	26	20	1	5
600	9	27	28	1	8
650	9	28	40	1	12
700	9	29	58	1	18
750	9	31	25	1	27
800	9	32	45	1	20
850	missed.			*	
900	9	36	30	3	45
950	9	37	25	0	55
1000†	9	38	40	1	15
1050	9	40	25	1	45
1100	9	42	4	1	39
1150	9	43	35	1	31
1200	9	45	20	1	45
1250	9	46	55	1	35
1300	9	48	25	1	30
1350	9	50	3	1	38
1400	9	51	38	1	35
1450	9	53	27	1	49
1500	9	55	17	1	50
1550	9	57	5	1	48
1600	9	58	47	1	42
1650	10	0	50	2	3
1700	10	2	35	1	45
1750	10	4	26	1	51
1800	10	6	50	2	24
1850	10	9	0	2	10
1900	10	10	56	1	56
1950	10	13	0	2	4
2000	10	15	8	2	8
2050	10	17	20	2	12
2100	10	19	50	2	30
2150‡	10	22	4	2	14

	fms.	M.	S.
Interval of first	1000	21	30
„ „ last	1000	36	30
		58	0

The line then ran out so slowly as to show that the lead was down at 2150 fathoms.

The following were taken with sewing-twine, for economy.

Wednesday, May 20th, 1857.—Sounded with sewing-twine or common seine-twine used for nets, from cutter, with American detaching-rod passed through a hollow shot, increasing the whole sinker to 13 lbs. Doubled first 50 fathoms of the twine, then allowed the sinker to descend for the first 200 fathoms with a slight check on the reel to prevent descending too rapidly and breaking.

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
50	4	50	58		
100	4	51	54	0	56
150	4	52	49	0	55
200	4	53	45	0	56
250	4	54	44	0	59
300	4	55	45	1	1
350	4	56	52	1	7
400	4	57	59	1	7

* This interval equals 150 fathoms. † 20 fathoms too much. ‡ Down.

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
450	4	59	13	1	14
500	5	0	23	1	10
550	5	1	45	1	22
600	5	3	6	1	21
650	5	4	31	1	25
700	5	6	1	1	30
750	5	7	27	1	26
800	5	9	3	1	36
850	5	10	41	1	38
900	5	12	24	1	43
950	5	14	7	1	43
1000	5	15	48	1	41
1050	5	17	32	1	44
1100	5	19	8	1	36
1150	5	21	9	2	1
1200	5	23	10	2	1
1250	5	25	10	2	0

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
1300	5	27	15	2	5
1350	5	29	22	2	7
1400	5	31	33	2	11
1450	5	33	41	2	8
1500	5	36	4	2	23
1550	5	38	24	2	20
1600	5	40	44	2	20
1650	5	43	2	2	18
1700	5	45	31	2	29
1750	5	48	4	2	33
1800	5	50	36	2	32
1850	5	53	4	2	28
1900*	5	55	33	2	29
	5	56	52		
1950	6	2	45	7	12
Paid out 50 fathoms by hand.					
2000	6	8	45	6	0

During this sounding there were very light easterly airs, a slight swell, but no apparent current; and the boat was kept perpendicularly over the line by four oars constantly moving. At 6.15 I commenced to haul in the line. Hauled in hand over hand slowly, supposing the instrument had detached from the shot; and at 8.10 1750 fathoms of the twine were recovered, but without the American rod, the line having parted about 250 fathoms from the shot. This could not have been done in hauling up, but either when down, from the instrument not having detached and the strain breaking it, or more probably from the line having *parted when it appeared to strike bottom*, and thus given a false indication. To verify which I sounded again with a hollow shot and a piece of lead weighing 12½ lbs., attached to seine-twine by Bonicci's sounding-claw. Eased down 50 fathoms.

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
50	8	36	35		
100	8	37	18	0	43
150	8	38	7	0	49
200	8	38	57	0	50
250	8	39	54	0	57
300	8	40	55	1	1
350	8	42	0	1	5
400	8	43	14	1	14
450	8	44	31	1	17
500	8	45	54	1	23
550	8	47	21	1	27
600	8	48	52	1	31
650	8	50	26	1	34

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
700	8	52	5	1	39
750	8	53	47	1	42
800	8	55	35	1	48
850	8	57	26	1	51
900	8	59	21	1	55
950	9	1	20	1	59
1000	9	3	22	2	2
1050	9	5	27	2	5
1100	9	7	33	2	6
1150	9	9	44	2	11
1200	9	11	56	2	12
1250	9	14	16	2	20
1300	9	16	37	2	21

* Commenced running slowly.

Depth in fathoms.	Time. H.	M.	S.	Intervals. H.	S.
1350	9	19	1	2	24
1400	9	21	29	2	28
1450	9	24	4	2	35
1500	9	26	42	2	38
1550	9	29	19	2	37
1600	9	32	0	2	41
1650	9	34	43	2	43
1700	9	37	25	2	42
1750	9	40	12	2	47
1800	9	43	2	2	50
1850	9	45	57	2	55
1900	9	48	54	2	57

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
1950	9	51	51	2	57
2000	9	54	52	3	1
2050	9	57	57	3	5
2100	10	1	5	3	8
2150	10	3	39	2	34*
2170	10	5	50	began to go slowly, as if down.	
2200	10	7	14	3	35
Paid out to					
2250	10	15	50	8	36
2300	10	24	42	8	52

Thus the sinker appeared to be down between 2150 and 2200 fathoms. Allowed the line to take itself till 2300 fathoms were paid out, then hauled in the slack, fancying the line had carried away. When 150 fathoms were got in, the strain became great, evidently showing that the line was not broken, and that the weight was still attached to the claw; when hauling in a little more, the line broke, nearly at the 2150 fathoms' mark, at the surface, which proves that bottom was struck at about 2170 fathoms, and that the line was not strong enough to lift the weight out of the soft bottom.

Sounded again in the same place with a hollow shot weighing 9 lbs., to vary the conditions and afford better proof of the line having reached the bottom, using also no detaching instrument, but a larger reel, which worked much easier than the former one. During the sounding, a light breeze sprang up from the eastward, with a short chopping sea. Kept the boat perpendicularly over the line. Apparently no current. Eased down to 50 fathoms, then allowed the line to run freely by its own weight, at the rates shown below:—

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
50	10	50	4		
100	10	50	53	0	49
150	10	51	50	0	57
200	10	52	57	1	7
250	10	54	11	1	14
300	10	55	30	1	19
350	10	56	59	1	29
400	10	58	30	1	31
450	11	0	6	1	36
500	11	1	49	1	43
550	11	3	32	1	43

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
600	11	5	20	1	48
650	11	7	10	1	50
700	11	9	5	1	55
750	11	11	2	1	57
800	11	13	1	1	59
850	11	15	4	2	3
900	11	17	10	2	6
950	11	19	20	2	10
1000	11	21	37	2	17
1050	11	23	54	2	17
1100	11	26	11	2	17

* This short interval arose from paying out the line by hand faster than when taking it off the reel by its own weight, so as to attach another reel to its end.

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
1150	11	28	32	2	21
1200	11	30	51	2	19
1250	11	33	21	2	30
1300	11	35	49	2	28
1350	11	38	17	2	28
1400	11	40	49	2	32
1450	11	43	21	2	32
1500	11	46	1	2	40
1550	11	48	41	2	40
1600	11	51	13	2	32
1650	11	54	7	2	54
1700	11	57	1	2	54
1750	11	59	56	2	55
1800	12	2	56	3	0
1850	12	5	35	2	39
1900	12	8	34	2	59
1950	12	11	36	3	2
2000	12	14	43	3	7
2050	12	17	53	3	10
2100	12	21	7	3	14
2150	12	24	32	3	25
2170	12	27	0	commenced going slowly, as if down, but then increased to	
2200	12	29	32	5	0
2250	12	35	5	5	33
Held on line, to see if weight was down; let go again at	12	36	28		
Paid out to 2300	12	43	17	6	49

The weight appeared to be down at the same depth as in the previous sounding, viz. between 2150 and 2200 fathoms. Allowed the line to take itself to 2300 fathoms. Hauled in about 50 *fathoms*. Line broke with slight increase of strain over the weight, from pitch of boat, at between 2150 and 2200 fathoms.

N.B.—The line, after having reached 2170 fathoms, took less time to take out the next 50 fathoms than on former occasions, owing to the boat pitching a little more from an increased swell, and also from the reel now used being of a larger diameter than the former one, and consequently requiring less effort to keep it turning.

There was no apparent current, the line being taut up-and-down at 2170 fathoms.

Interval of last 1000, 53 min. 6 sec.
Interval of the 2000, 1 hour 25 min.

Place of above soundings, lat. 35° 33′ N., long. 18° 48′ E.

The next experiment was made by measuring the strain upon the line after the weight appeared to be down and the line slack, and also when hauled to full tension so as to feel the weight of the sinker, if it were still attached, and whether it was on the bottom.

May 21st, 6.30 P.M.—Sounding with common empty shell weighing 8½ lbs., attached to twine by Bonicci's sounding-claw. Eased down 50 fathoms.

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
50	6	40	5		
100	6	41	2	0	57
150	6	42	6	1	4
200	6	43	16	1	10

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
250	6	44	33	1	17
300	6	45	57	1	24
350	6	47	25	1	28
400	6	48	59	1	34
450	6	50	37	1	38
500	6	52	24	1	47
550	6	54	13	1	49
600	6	56	7	1	54
650	6	58	3	1	56
700	7	0	7	2	4
750	7	2	14	2	7
800	7	4	24	2	10
850	7	6	39	2	15
900	7	8	59	2	20
950	7	11	17	2	18
1000	7	13	41	2	24
1050	7	16	6	2	25
1100	7	18	31	2	25
1150	7	21	0	2	29
1200	7	23	34	2	34
1250	7	26	11	2	37
1300	7	28	51	2	40
1350	7	31	39	2	48
1400	7	34	26	2	47
1450	7	37	17	2	51
1500	7	40	11	2	54
1550	7	43	14	3	3
1600	7	46	20	3	6
	7	47	40	Down.	
1650	7	52	25	6	5
1700	8	0	5	7	40

The lead was thus evidently down at 1620 fathoms; but we allowed line to run out by its own weight to 1700 fathoms, then weighed strain of line with a spring steelyard, which was as follows:—Weight of slack line 1 lb. Hauled in 25 fathoms, and weight was then 3 lbs. Hauled in 50 fathoms, weight was then 4½ lbs.; and after hauling in 100 fathoms the strain increased to 8 lbs., showing that the sinker was still attached to the claw, and had previously been on the bottom, and was still held there. Let go again to try and detach it; then hauled up again till the strain attained to 8 lbs., and let go a third time, but with a similar result. Then hauled up hand over hand very gently to see if it was possible to weigh it, when the strain became so great as to carry away the line close to the water's edge. After this sounding was ascertained, two leaden pipes, with a valve at top of each, and lashed together, were put over from the ship, attached to deep-sea line as a sinker, and the line was then veered out to 2200 fathoms to ensure reaching the bottom; and when hauled up again, they returned to surface with a coffee-cupful of yellow clay; and thus the simple plan of a common pipe of only three-fourths of an inch in diameter, but with an uplifting valve, succeeded perfectly as a means of bringing up bottom from this depth without any other sinker, and, I believe, brought up the largest quantity ever procured at that depth.

The clay was found not only to be full of Infusoria, but to contain numerous dead shells and fragments of shells of well-known animals of the superficial zones of the sea, viz. *Hyalæa*, *Criseis*, &c., or such as come to the surface sometimes in these seas.

May 22nd, 1857, 4 A.M.—Sounding with common empty shell, weighing 8 lbs., attached to seine-twine. Eased down 50 fathoms; let go.

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.	Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
50	4	15	33			1100	4	56	33	2	48
100	4	16	37	1	4	1150	4	59	25	2	52
150	4	17	40	1	3	1200	5	2	19	2	54
200	4	18	53	1	13	1250	5	5	33	3	14
250	4	20	13	1	20	1300	5	8	38	3	5
300	4	21	42	1	29	1350	5	11	24	2	46
350	4	23	18	1	36	1400	5	14	35	3	11
400	4	25	0	1	42	1450	5	17	53	3	18
450	4	26	45	1	45	1500	5	21	16	3	23
500	4	28	34	1	49	1550	5	24	39	3	23
550	4	30	29	1	55	1600	5	27	58	3	19
600	4	32	25	1	56	1650	5	31	10	3	12
650	4	34	40	2	15	1700	5	34	34	3	24
700	4	36	58	2	18	1750	5	37	58	3	24
750	4	39	9	2	11	1800	5	41	24	3	26
800	4	41	30	2	21	1850	5	44	57	3	33
850	4	43	44	2	14	1900	5	48	23	3	26
900	4	46	10	2	26	1950	5	51	55	3	32
950	4	48	45	2	35	1970	5	54	24	Down.	
1000	4	51	18	2	33	2000	5	56	25	4	30
1050	4	53	45	2	27	2050	6	3	25	7	0

Down at 1970 fathoms. Allowed line to run out by its own weight to 2050; weight of slack line 1½ lb. to 3 lbs. Hauled up 25 fathoms, when strain was 4 lbs. to 5 lbs. After 50 fathoms was hauled in, strain was 5 lbs.; and after 75 fathoms, it increased from 6 lbs. to 8 lbs. The greatest strain felt was at 1970 fathoms, being from 9½ lbs. to 12 lbs., and thus equal to the weight of the sinker. It carried the line away close to the surface. The last 1000 fathoms took 1 h. 2 m. 13 s. to descend, and the whole 1970 fathoms 1 h. 36 m.

Sounding with hemp twine specially made by Newall & Co.

June 10th, 1860. — Sounded with a 34-lbs. lead attached to Newall twine, eased down 50 fathoms double. Wind N.W. 21. Sea smooth.

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.	Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
50	5	11	5			550	5	18	16	1	0
100	5	11	28	0	23	600	5	19	19	1	3
150	5	11	57	0	29	650	5	20	25	1	6
200	5	12	31	0	34	700	5	21	34	1	9
250	5	13	9	0	38	750	5	22	46	1	12
300	5	13	50	0	41	800	5	23	59	1	13
350	5	14	36	0	46	850	5	25	16	1	17
400	5	15	26	0	50	900	5	26	35	1	19
450	5	16	20	0	54	950	5	27	57	1	22
500	5	17	16	0	56	1000	5	29	21	1	24

Depth in fathoms.	Time. H.	M.	S.	Intervals. M.	S.
1050	5	30	47	1	26
1100	5	32	18	1	31
1150	5	33	50	1	32
1200	5	35	25	1	35
1250	5	37	0	1	35
1300	5	38	40	1	40
1350	5	40	22	1	42
1400	5	42	5	1	43
1450	5	43	50	1	45
1500	5	45	38	1	48
1550	5	47	27	1	49
1600	5	49	10	1	43
1650	5	51	7	1	57
1700	5	53	3	1	56
1750	5	54	59	1	56
1800	5	56	*37	1	38
1850	5	58	58	2	21
1900	6	0	59	2	1
1950	6	3	4	2	5
2000*	6	5	42	2	38
2050	6	11	58	6	16

The greatest strain of slack, as shown by spring steelyards,

did not exceed . . . . . 3 lbs.

Then hauled in about 10 fathoms, ditto equalled . 4 to 6 „ only.

„ „ 20 „ „ . . . . 6 „ 8 „

„ „ 25 „ „ . . . . . 10 „

„ „ 30 „ „ . . . . . 12 „

„ „ 45 „ „ . . . . . 14 „

The weight was thus evidently down, and still attached; and the fact of the 2000 fathoms' mark giving a strain of from 12 to 14 lbs. shows the depth to be about 1975 fathoms, because we see the interval there, from having been remarkably uniform, suddenly increased, being 2m. 38s., whereas if 2000 fathoms were the depth, the interval would have been 2m. 8s.; and had the line been broken, the strain would never have exceeded 3 or 4 lbs. with the quickest jerk used to test it.

In this sounding, as there was now a *certainty*, from the above experiments, of the line being still attached to the bottom, I was induced to test the strength of the surface and descending current, as also the temperature and density.

Having paid out sufficient slack line to make fast a hollow cylindrical float as a buoy, the superficial current running past it was tried, when the rate observed from a boat kept on a certain bearing abreast of the float was 156 feet in five minutes, thus giving a surface-current of 0·3 of a knot, or 3-10ths of a mile per hour. I then lowered a *suspended sinker*, with a similar float as a buoy, and close to the fixed one, down to the depth of 10 fathoms, when there was found a current running past its float of only 80 feet in five minutes, or just half the rate of the actual surface-current, as shown by the buoy attached to the bottom. The suspended sinker was consequently then in a current of only half the superficial one. I then lowered it into 20 fathoms, and the current observed passing its float was found to be 110 feet in five minutes, or 2½-10ths (0·25)

* Down.

of a knot, thus showing that the suspended sinker was nearly as stationary as the one at the bottom.

Therefore at 20 fathoms from the surface there was a current of only ¾ths of a 10th of a knot, being 0·225 or 2¼-10ths of a knot less than at the surface.

The suspended sinker was then lowered to the depth of 50, and then of 100 fathoms, at which depths there were no apparent currents, the surface-currents running equally strong past both the floats, both therefore remaining stationary, and thus showing that the suspended sinker had reached and was retained in *still water*. The interesting question of trying ocean currents at various depths, however, will be more fully dwelt upon in another section of the Appendix.

The following temperatures were then observed by Negretti's patent No. 99 A 34; and the saline density was also observed:—

		°			°
Air		80			
Surface of sea		74	Density		29¼
At 10 fathoms		72½			
20	„	69			
30	„	63			
50	„	59¾	„		29½
100	„	58½	„		29¼
1200	„	58¾	„		28¾

Thus it appears that below 100 fathoms the temperature remained the same, and that the saline density differs but little between the surface and greater depths of the Mediterranean.

N.B. It will be seen from the preceding soundings, that the rate of descent of the whole interval with a prepared smooth line about equalled that of the silk lines, occupying about one hour for the descent of 2000 fathoms, with similar light weight; whilst the rough spun seine and sailmakers' twine took about 30 minutes more, showing that a specially made twine answers as well as silk.

II.—REMARKS AND EXPERIMENTS ON THE SUPERFICIAL AND SUPPOSED UNDERCURRENTS OF THE MEDITERRANEAN, ETC.

THE question of ascertaining the strength of the currents at different depths, or of the existence of undercurrents, is necessarily connected with a scientific examination of the depths of the sea.

The plan, therefore, I adopted for ascertaining such currents I shall now dwell upon more fully, although I have given one example, in connexion with the depths, in Appendix I.

It can be easily understood that, if a superficial current of one knot is observed to pass a float attached to a line which has its sinker at the bottom, and if the same amount of surface-current passes a float which is attached to a sinker *suspended halfway* or at any depth between the surface and bottom, the suspended sinker is evidently as stationary as the one at the bottom, and therefore must be in perfectly still water, whatever the depth may be; *consequently the superficial current does not descend to that depth.*

Also, if another sinker is suspended at only a few fathoms (say 10 fathoms) from the surface, and the float that supports the sinker has no current passing it, and consequently drifts away from the stationary float attached to the bottom, it is quite clear that the suspended sinker and its float are within the same influence, in fact in the same amount of current. Again, if the suspended sinker be lowered to 20

fathoms, and a current of about half a knot be then observed passing its float, although drifting away from the stationary float, then, as this latter float showed a current of one knot passing it, and the float of the suspended sinker in 20 fathoms only showed a current of half a knot, it is also clear that the sinker was suspended in a current of only half the speed of the superficial current, viz. of half a knot only. Also, if the suspended sinker be lowered to 50 fathoms, and the superficial current passing its float be three-fourths of that passing the float attached to the bottom, or running three-quarters of a knot, it is evident that the current at the depth of 50 fathoms was three-fourths less than the surface-current, or only running at the rate of one-fourth of a knot.

In this manner, then, my experiments were carried out at different depths, and at different times, in the Archipelago, Sea of Marmora, and Dardanelles, as being favourable positions for testing the superficial currents, and also of the existence of undercurrents, if any existed in these straits and seas, as some have supposed.

Thus, on the morning of December 19th, 1857, I hove to in H.M.S. 'Medina,' between Rodosto and Marmora Island, and from a boat sounded with a shot and seine-twine in 350 fathoms, and then attached to it a small piece of light wood as a float. This superficial current was then tested by the common log-reel, run out from a boat when kept stationary near the float, and, by the long glass, for double the time usually allowed (viz. for 56 seconds instead of 28 seconds), to ensure greater accuracy; and the trial was repeated several times to verify it. When a current of $\frac{9}{10}$ths of a knot was observed to be running towards the Dardanelles, experiments for trying the rate of the current at different depths were then made in the following manner:—A flat piece of wood like a log-ship on a large scale, or one about a foot square,

with a piece of lead of about 4 lbs. attached to it, was slung by its four corners, so as to act as a suspended sinker, and lowered to a depth of 5 fathoms. A tubular float of tin or copper, sufficient to support this sinker, was then attached to the line; and as no current was observed passing the float when the sinker was at this depth, it follows that both float and sinker were in the same amount of current, or in the upper stratum of the current; that is, both were drifting along in a current of $\frac{8}{10}$ths of a mile per hour.

It was then lowered to 10 fathoms, when a slight current was observable passing the buoy or float, and measured about $\frac{3}{10}$ths of a knot per hour, or just one-third of the rate of current running past the fixed float with sinker at bottom in 350 fathoms; therefore the rate of current at 10 fathoms was ascertained to be only $\frac{6}{10}$ths of a knot per hour.

The suspended sinker was then lowered to 20 fathoms, when there appeared a much greater amount of current passing the float, and the rate was found by the log-line to be about $\frac{5}{10}$ths of a mile per hour, thus showing that the float of the suspended sinker was held in check by the sinker being in a current about half that of the surface-current, or running at only about $\frac{4}{10}$ths of a mile per hour, at 20 fathoms' depth.

Again, on lowering the sinker to 30 fathoms there was immediately observed an increase of the superficial current passing its float, showing, therefore, a still diminishing current as the suspended sinker descended, since it was thus kept more stationary.

And at 40 fathoms the rate of current passing the float of the suspended sinker was about $\frac{8}{10}$ths of a mile; and therefore the current at 40 fathoms was then running at only $\frac{1}{10}$th of a mile. The sinker was then lowered to 50, 100, 200, and 300 fathoms, and the same rate of current observed to pass the float as at 40 fathoms; consequently it appeared that the

sinker had reached a uniform rate of current of $\frac{1}{10}$th of a knot at all those depths, and was not in perfectly still water.

Thus the experiments with the line actually attached to the bottom showed a superficial current of about $\frac{1}{10}$th of a mile more than was shown by the float of the suspended sinker when in the greater depths; for by the former the surface-current was $\frac{9}{10}$ths of a mile, and by the latter it was $\frac{8}{10}$ths of a mile.

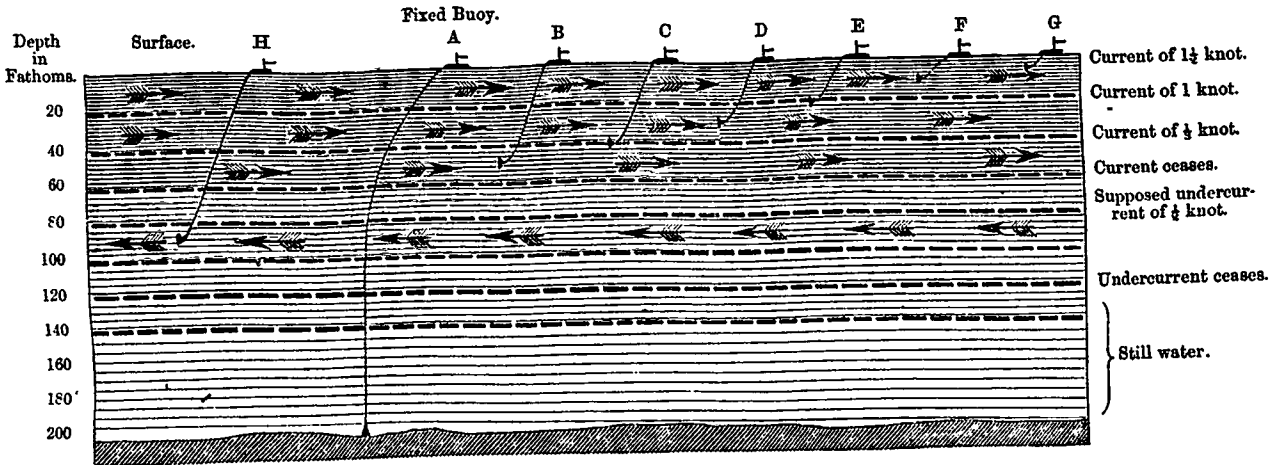
Then either there must have been an equal current at all depths below 50 fathoms of nearly $\frac{1}{10}$th of a mile in the same direction as the surface-current, or the suspended sinker was *dragged at that rate* through the still water of the greater depths by the effect or force of the strong surface-current on the too bulky float of the suspended sinker—which I believe, for several reasons, to have been the actual fact, and not that there existed a positive current of $\frac{1}{10}$th of a knot at all those depths, more particularly as the rate thus indicated was uniform for all the greater depths. For as our experiments in the less depths showed a gradually decreasing current from the surface downwards, it would appear that the same diminution of rate must apply to the greater depths until still water is reached. Where the surface-currents are strong, and the float bulky and thick so as to offer great resistance, this error is likely to be always found.

Neither could any undercurrent have existed here, as many have imagined; for an undercurrent being an *opposite* current to the superficial current observed running past the fixed float, the current then observed running past the suspended float would have appeared *greater* when the suspended sinker had reached its influence than that showed by the float of the sinker attached to the bottom. Moreover, as the suspended sinker would have been dragged along by the undercurrent *in an opposite direction to the surface-current,* the

float of the former would have presented the singular phenomenon of going to windward of the latter, or, in other words, have run up against the stream instead of down with it; therefore when undercurrents exist, an apparent increase of the surface-current above its actual rate would be shown by that passing the float of the suspended sinker when within the influence of an undercurrent. This, on even a slight consideration, will be very evident; and the delicacy of the operation, when testing any very slow ocean-currents, will also be evident. But it is rendered sure and easy by using very fine twine as a log-line, and a very large log-ship, and by allowing it to run out from five to ten times the interval (of twenty-eight seconds) usual in measuring a ship's rate.

The diagram on the following page will illustrate the plan and result, and will be more comprehensible and satisfactory if we suppose the trials to have been made from two or three boats (instead of from one boat), each provided with three or four of the buoys and sinkers, arranged for different depths and *simultaneously* lowered, together with a fine log-line attached to each buoy instead of to a log-ship. Then the relative distance each had drifted from the stationary buoy and boats during a given time would show the relative speed of the currents at the different depths of the suspended sinkers, and their relative positions would be much as shown in the diagram; but had either sinker met with an undercurrent, its float would present the singular phenomenon of running up against the superficial stream, in the contrary direction to the rest, and be in the position of the float and sinker H in the diagram. *The experiments are therefore best carried out with several buoys, and only after the bottom has been reached with an attached sinker, so that a perfectly stationary float may be ensured, and not merely by means of two or more suspended sinkers.*

Diagram showing the mode of testing the existence, direction, and rate of surface- and under-currents in the deeps of the sea.



B, C, D, E, F, G, and H, relative positions of the floats to each suspended sinker, after being simultaneously dropped near the fixed float, A, and allowed to drift in their respective currents for five minutes.

The following experiments for testing the rate and depth of the superficial current were made in the narrowest part of the Dardanelles, opposite the Asiatic castle of Chanakalessi, where the bottom was less than 40 fathoms deep and the current the strongest. The experiments were made in the same manner as in the Sea of Marmora, and were as follows: viz.,

With the sinker on the bottom, the current passing it at the surface was at the rate of $2\frac{1}{4}$ knots per hour; but with a suspended sinker at 3 fathoms, the superficial current passing its buoy appeared to be no more than $\frac{3}{4}$ths of a knot;

$\therefore 2\frac{1}{4} - \frac{3}{4} = 1\frac{1}{2}$, the rate at 3 fathoms.

At 5 fathoms, 1 knot;

$\therefore 2\frac{1}{4} - 1 = 1\frac{1}{4}$, the rate at 5 fathoms.

At 10 fathoms, 2 knots;

$\therefore 2\frac{1}{4} - 2 = \frac{1}{4}$ of a mile at 10 fathoms.

At 20 fathoms, $2\frac{1}{4}$ knots;

$\therefore 2\frac{1}{4} - 2\frac{1}{4} = 0$,

and consequently at 20 fathoms still water.

At 40 fathoms $2\frac{1}{4}$ knots, or still water, as in 20 fathoms.

Again, at the entrance of the Dardanelles the following results were obtained, there being on the latter occasion a fresh breeze, which increased during the experiment:—

The rate of current passing the float with sinker at bottom in 40 fathoms was 2 knots.

When the suspended sinker was at 3 fathoms, its float showed a current of only $\frac{1}{4}$th of a knot;

$\therefore 2 - \frac{1}{4} = 1\frac{3}{4}$, the rate of current at 3 fathoms.

With the suspended sinker at 5 fathoms, its float showed a current of $\frac{3}{4}$ of a knot;

$\therefore 2 - \frac{3}{4} = 1\frac{1}{4}$, the rate of the current at 5 fathoms.

At 10 fathoms, $1\frac{3}{4}$ knot;

$\therefore 2 - 1\frac{3}{4} = 1\frac{1}{4}$, the rate of current at 10 fathoms.

At 20 fathoms, 2 knots;

$\therefore 2-2=0$, or no current at 20 fathoms.

At 40 fathoms, 2 knots;

$\therefore 2-2=0$, or no current at 40 fathoms.

By both these experiments in the Dardanelles the current was shown to cease below 20 fathoms, and that even at 10 fathoms it was so nearly still water as to indicate a superficial current nearly equal to its actual rate; or, in other words, the current at 10 fathoms was only $\frac{1}{8}$th of the rate of the superficial current.

From experiments made in the Bosphorus, in the month of June, about the same results were indicated; but the experiments then were not so complete.

From these results the absence of all undercurrent influence was evident, and clearly established the fact that the current from the Black Sea into the Mediterranean is merely a skimming surface-movement, diminishing rapidly to a depth of 20 fathoms, below which it is hardly perceptible.

Wishing to see whether the same condition existed in the Mediterranean, experiments were made between Cetre and the Morea, and the following results were obtained:—

Sinker at 5 fathoms			showed no current.	
„ 10	„		„	$\frac{2}{10}$ths of a knot.
„ 20	„		„	$\frac{4}{10}$ths „
„ 44	„	and on the bottom	„	$\frac{4}{10}$ths „

Thus, with a small superficial current in the strait to the Archipelago, there appeared to be no appreciable current below 20 fathoms.

Further, on December 26th, when at about 100 miles N.E. of Malta, a sounding was obtained in 1750 fathoms from a boat by common twine with an 8-lb. shot attached, as in previous soundings. After proving that the shot actually rested upon the bottom by weighing the strain with a steel-

yard, a float or buoy was then attached, to test the whole superficial current by a line that was actually fixed to the bottom at this depth, when there appeared to be a current of about $\frac{3}{10}$ths or $\frac{1}{3}$rd of a knot per hour from the westward, there being also a light wind and swell from that quarter.

The suspended sinker was then lowered to depths of 10, 20, and 40 fathoms, without showing any sensible current, and consequently drifted from the stationary buoy; but on being lowered to 100 fathoms, the same current of one-third of a knot was evident as with the line attached to the bottom; consequently even here the perceptible or appreciable current did not appear to descend below about 50 fathoms, just as in the Sea of Marmora.

The very high temperature of the Mediterranean deeps as compared with that of the Atlantic and Pacific (where, according to Ross, Belcher, Denham, Pullen, and others, it seems to remain at about 39½° Fahrenheit in all latitudes between the Arctic and Antarctic zones) results apparently from its insulation from the Atlantic deeps by the 150-fathom bank across the entrance of the Gibraltar straits, and thus to have settled, apparently, into a mean resulting from the small terrestrial influence from below and the large solar influence above, since the normal temperature is constantly about 59° at all depths below 100 fathoms. The fluctuations of temperature in the Mediterranean sea are consequently confined to this upper zone of about 100 fathoms, in which the temperature varies with the seasons, being from 10 to 20 degrees higher in the summer and autumn season, and about 10 degrees lower in the winter and spring months; whilst in the Atlantic the atmospheric or solar influence descends to a depth of about 500 fathoms in the same parallel, and in the tropics to a depth of 1200 fathoms. This is a peculiarity deserving of notice. It no doubt arises from the higher normal tempe-

rature of the Mediterranean deeps, and not from the existence of undercurrents in the Atlantic below that depth; for had the normal temperature of the Mediterranean been as low as that of the Atlantic, the superficial influence would no doubt have extended to the same depths as in the Atlantic. But upon the first consideration of the fact the inference seems to be that the Atlantic deeps are under the influence of undercurrents. But appreciable undercurrents I have no belief in, except, probably, where two great streams meet, such as the Arctic current and the Gulf stream. It has been well shown, too, during the sounding of the Atlantic, that perfectly still water reigns in its deeps, by the fact of the sounding-line, on several occasions, having coiled itself upon the sinker when some 200 or 300 fathoms more than the actual depth had been accidentally paid out from the ship, and thus all came up in a bunch together, thereby proving that it must have descended perpendicularly over the spot in passing through the lower depths; and though the lead and line must have taken at least from ten to fifteen minutes in the descent, yet there was no such appreciable movement in the substrata of the deeps it passed through as to draw or divert the line even a few inches out of its perpendicular, although it must have been considerably so in passing through the superficial zones above; for the impossibility of keeping a ship pivoted over such a point for such a length of time, or even for a few minutes only, under the most favourable circumstances, from the combined influence of swell and superficial currents, tending to move her from that position the moment the lead has been let go, is evident to every one. Hence it will be perceived that, unless perfectly still water existed at the lower depths, no coiling together of the slack line upon the lead could occur.

Now it is shown by the few soundings that have been taken

in the Atlantic, that probably a continuous depth of at least 2000 fathoms extends along it between the Arctic and Antarctic circles.

The consideration of the above points, then, opens up the question of how this low normal temperature of the Atlantic and Pacific deeps is retained in continuity, with a higher terrestrial temperature below, as generally supposed, and a higher atmospheric temperature above—whether it is due to the horizontal conduction of this temperature from the Arctic and Antarctic seas (where the temperature of those depths is permanently about 39½° Fahrenheit), combined with the water's greater density and consequent tendency to remain below, the result of that low temperature, or whether it is caused by an undercurrent communicating between pole and pole, as some have supposed.

I do not attempt to discuss this question, but only touch upon it here as being somewhat in connexion with the facts I have before noticed regarding the high normal temperature of the Mediterranean, and the low normal temperature of the Atlantic communicating with it, and am induced merely to state, in reference to the undercurrent theory, that there seems to be an opposing difficulty in the first thought upon it,—first, because the horizontal conduction of heat or cold can evidently occur without necessitating an appreciable horizontal current also; and secondly, because the existence of such a current seems to require either one of two conditions—viz., a much less density of the substratum of fluid before it, so as to draw it horizontally; or a forward pressure in that direction, in consequence of a greater density at the place of its origin, or source of pressure behind.

But on consideration of the phenomena, it seems that, *if* such a lateral or horizontal pressure had been set up in the deeps by any increased intensity of cold and, in consequence

of it, an increased density of the deeps of the Arctic Sea, or from any other cause, the following or yielding movement would tend upwards towards the surface, rather than horizontally for any great distance, as a burrowing wedge of fluid through the well-backed and equally or nearly equally dense substratum of water extending in front of it, and in unbroken continuity from the Greenland Sea to the Antarctic Ocean; and therefore the existence of undercurrents seems to me very questionable, and requires some clear proof or explanation to render it acceptable. Although undercurrents undoubtedly exist in the atmosphere, and thus lead to the general belief in such general movements as a law of the deeps of the sea also, yet the modes in which the solar influence operates upon the two media are diametrically opposite. In the sea the rarifying influence of the sun commences from (and therefore remains at) the surface, whilst in the atmosphere it commences from below, and therefore disturbs and causes the lower strata to ascend. The sea is also comparatively a non-elastic fluid, whilst the air is the most elastic, and thus yields to every local influence, whether of heat or cold.

The isothermal temperature of the ocean deeps (viz. about 39½° Fahr.) has been supposed to be that at which the water attains its greatest density, probably because it is found at the lowest tried depths of the Atlantic and Antarctic seas, an because of its being the temperature of greatest density of fresh water; and therefore it has been said that a lower temperature made the sea-water lighter, causing it to float upon that at the above-mentioned temperature *.

But this is contradicted by the temperatures found by Sir E. Parry, and by the recent experiments of M. Edland, M. Despretz, and others, which seem to show that the greatest density of sea-water is attained between 22° and 25° Fahr.

* 'North Atlantic Sea-Bed,' pp. 98 & 99.

It seems to me therefore (and I was impressed with the opinion before knowing of this fact and the statements that confirm it) that this isothermal temperature of 39½°, found throughout the Atlantic and Antarctic deeps, is the settled mean temperature produced by the atmospheric influence upon these areas, as about 59° Fahr. is of the eastern basin of the Mediterranean, and about 55½° Fahr. is of the deeps of the Greek Archipelago—this difference occurring in consequence of the separation of the deeps of the two basins by a submerged but comparatively shallow ridge between them, as the Mediterranean deeps are separated from the Atlantic by the shallowest part of the Straits of Gibraltar, and with an isothermal temperature of 59° for the deeps on one side, and of 39½° on the other.

These facts suggest the view that there really may not be an exact correspondence between the lowest temperatures of the Pacific, Atlantic, and Indian oceans, although, when a temperature in excess of or under 39½° has been found, there has generally been supposed, since Sir James Ross's establishment of this as the normal temperature of the ocean deeps, to be an error of observation, or a defect in the instrument used.

III.—ON THE SALINE DENSITY OF THE BLACK SEA AND MEDITERRANEAN AT DIFFERENT DEPTHS.

Whilst following out the experiments for ascertaining the current, the saline density of the water was at the same time tested by means of an hydrometer, and found to be as follows for the following localities, distilled water being 0 or zero.

	Hydrometer.
Surface of Black Sea, off Varna	13½°
„ „ near the Bosphorus . .	13½
„ of Sea of Marmora	20
„ of Archipelago at Tenedos	29
„ „ at Cerigo	29
„ of Mediterranean near Malta . . .	29
At 800 fathoms „ . . .	29
At 1200 „ „ . . .	29½
At 2000 „ „ . . .	30

Thus the comparative surface-densities are at once seen.

But Mr. Wilcox, the surgeon of the 'Medina,' who kindly undertook this part of the experiment, obtained the proximate percentage of saltness, at the same time, by adding grains of salt to distilled water until the same densities were shown with the same instrument; and the following proportions resulted:—

Surface-water of the Black Sea showed a proportion of	1·66 per cent.
Surface of the Sea of Marmora and Dardanelles	2·39 „

Surface of Archipelago and Mediterranean 3·39 per cent., this superficial density being observed to be the same from the Greek Archipelago to Malta.

But having carried out these observations at different depths also in the Sea of Marmora and the Dardanelles, a very interesting fact was ascertained—namely, that nearly in proportion as the descending superficial current from the Black Sea diminished, so did the saline density of the water increase; and where there appeared to be no current (that is, *below forty fathoms* in the Sea of Marmora and *below twenty fathoms* in the Dardanelles) the density or degree of saltness remained the same at all depths, and was the same as that of the Mediterranean.

Thus, in the Sea of Marmora, the density of the water brought up from the depth of 40 fathoms, and also from the bottom at 400 fathoms, was found to be the same, viz. 29° by the hydrometer, and corresponded with the densities of the Mediterranean as tested by me from the surface to a depth of 800 fathoms, there being no sensible increase of the density in the Mediterranean down to that depth; but at 2000 fathoms, on one occasion, the density was found to be 30°.

In the Dardanelles, the current was found to cease, as in Sea of Marmora, at the depth of 20 fathoms, and the maximum of saline density was found to commence at that depth, whilst the surface showed the same density as that of the Sea of Marmora; and we found also an increase of density nearly in the same proportion as the decrease of the rate of the currents at successively greater depths. In fact so evident was this after a few experiments, that, on obtaining water from any depth in the Dardanelles, I was enabled to tell nearly exactly the depth from which the water had been procured, by merely putting it into a glass and seeing its density by the hydrometer, without referring to the registry of depth; so that on

one occasion I detected an error in the registry from its non-agreement with former results as to density at stated depths; and a repetition of the experiment proved the error I suspected at the time, from the observations then being made with the hydrometer in my cabin, cotemporaneous with the soundings (as the ship lay drifting with the stream down the strait) for this object.

A reference to the following tabulated comparisons of depths and densities, obtained on December 20th, 1857, in the Dardanelles, will at once explain my meaning:—

Depth from which procured.	Density by Hydrometer.	Temperature.	Current.
Surface ..	20°	50°	2¼ knots.
5 fathoms	22	50	1½ knot.
10 „	25	53	¾ „
15 „	27	55	¼ „
20 „	28	55	0 Very slight current.
Mean Bottom at 40 fathoms	29	54	0 No current, and same density as Mediterranean.

It became, therefore, a point of importance to follow this interesting difference of density into the Archipelago, in order to see where the influence of the Black Sea became wholly absorbed in that of the Mediterranean; and I was surprised to find that at only five or six miles from the Dardanelles the density of the surface was already increased to 27° by its admixture with the Mediterranean or Archipelago waters (a density the same as existed at the depth of 15 fathoms within the Dardanelles and 20 fathoms within the Sea of Marmora), and that at Tenedos the surface-density was 29°, the same as at 40 fathoms in the Sea of Marmora, and also the general density of the Mediterranean. It is probable that in the direct line of the current, viz. towards Lemnos, the diluted waters continue further.

Thus there is not found, as has been supposed, a great increase of density with increasing depth in the Mediterranean waters, such as is found in the Sea of Marmora, except where the fluvio-marine Black-Sea waters, merely skimming over the surface, do not intermix below the depth of 30 or 40 fathoms. But as the currents from the Mediterranean flow into the Sea of Marmora for several days, at certain seasons and during certain winds, this influx of denser water then raises its surface-density in general above the density of the Black Sea, which (according to some observations recently obtained by Lieut. Gillson of the 'Cockatrice,' at my request, on his return to the Danube in the spring of 1863) increases from 13° at the surface to only 15° at 100 fathoms. Thus the Black Sea seems to differ from the Sea of Marmora in having a more universally diluted state of its waters at the greater depths; but as this fact has not been ascertained for greater depths than 100 fathoms, and the depth over the greater part of its area is nearly or more than 1000 fathoms, I make the above statement with some reserve. But I must add that this apparently diluted condition of the deeps of the Black Sea, as well as of its surface-waters, seems to be confirmatory of the geological evidences I have observed around the shores of this sea, which seem to indicate that pure fresh-water deposits are the latest existing around its margin, excepting a superficial earthy marl that has more the character of a surface drift from an overflow under a subsidence, than a slow subaqueous or marine deposit.

Therefore the Black Sea at present presents the condition of an enclosed basin under the slow transition from a fresh to a salt sea, apparently effected by the influx of an occasional current from the Mediterranean—a current which only occurs during strong westerly gales in the autumn and winter season, and when the Black Sea rivers are also very low;

and thus, having, from its greater density, a tendency always to descend through the lighter and fresher waters of the Black Sea, it becomes more uniformly diluted throughout the deeps (at least I presume it to be so, from Lieut. Gillson's observation at 100 fathoms); whilst the Sea of Marmora, from its smaller size, becoming entirely of the same density as the Mediterranean by this periodical influx, retains that density, as I have shown, below the depth of 40 fathoms—that is, below the maximum depth of the intervening canals or straits separating it from the Mediterranean and the Black Sea; for the more constant influx of diluted waters from the latter naturally flows over it, intermingling with and moving only the surface-waters above that depth, through having no tendency to descend, from being of less specific gravity or in a more diluted condition than the deeper waters it skims over.

These results of direct experiments and research at one inlet to the Mediterranean awaken a desire to know whether similar conditions exist at the Straits of Gibraltar,—that is, in respect to the depth of the central and littoral currents observed there; for I am strongly of opinion that the current there also will be found to decrease rapidly from the surface, and that *below* the depth of 40 or, perhaps, 30 fathoms, there may not be found either an appreciable upper current into the Mediterranean, or any undercurrent out, as generally supposed, any more than at the Dardanelles. I believe that the general opinion of the existence of an undercurrent there has in great part resulted from observing the line when sounding appearing as if it were suddenly carried away against the stream, on reaching a certain depth, apparently by an undercurrent, when, in fact, it is only the shallow surface-current carrying the boat or vessel rapidly away from over the position of the lead and line, on its having reached still (or nearly

still) water; and this being always so observable, shows the shallowness of the surface-current there, as at the Dardanelles. Besides, the great deeps of the Mediterranean are barred from the Atlantic deeps by a submarine bank, connecting Africa with Europe, which is apparently at not more than 140 or 150 fathoms' depth in any part, judging from the few soundings yet obtained; and in all probability the depth is even something less along the crest of the ridge, which seems to lie in a direct line between Cape Spartel and Cape Trafalgar.

Hence I believe that much less of the Atlantic waters flows into the Mediterranean than is generally supposed, first, from the very superficial character of the inward current; secondly, from its being more general only in the central portion of the Straits, and from the eddies and ebb currents, that run outward along the shore to a distance of from half a mile to two miles, carrying a certain portion of that out again, so that the loss by evaporation over the Mediterranean is no doubt much more largely met by the innumerable rivulets and springs that percolate perpetually through all parts of its *shores* from the surrounding mountainous continents, as well as the large rivers that flow into it, than by the Atlantic supply, and that this accounts for its slow rate of increase in saltness as it approaches the Atlantic, or in the deeps of its western basin.

IV.—ON THE GEOLOGY OF CRETE.

The general character of the strata of the island having been noticed in the several chapters of this work, I shall only briefly describe their distribution, apparent stratigraphical sequence, and probable geological ages.

Limestones.

All the higher mountain-ranges have a very uniform mineralogical character, and consist of insulated masses of grey and blackish semicrystalline and compact limestone, more or less interstratified by thin beds of shale and schist, and sometimes gypsum, the latter, however, never attaining such a thickness as to give to these uplifted masses the features of a recognized division. The limestones are thick-bedded and somewhat crystalline in the lower portion of the mass, and more generally compact and thinly stratified in the upper part of the series; in the former occur bands of black flints which seem to indicate a Cretaceous age.

The oldest fossils that I have been able to detect in any of these limestones were what seemed to be Hippurites, and in one instance, as in Lycia, they were associated with several species of Nummulites. But a traveller in the island, at the beginning of the last century, describes Belemnites as having been procured by him at the base of Mount Ida. The series, though not divisible by any apparent want of conformability denoting two distinct ages, may nevertheless contain strata that represent rocks of both the Cretaceous and the Jurassic age. But, for the convenience of using a generalized term for these as yet not perfectly determined masses of lime-

stone, I shall adopt the term "Scaglia," as it is usually applied to them by Mediterranean geologists, in consequence of the want of a clear identification of the ages of those masses of limestone in which Hippurites and Nummulites occur, separately or collectively. The general dip of these masses of limestone is to the N.E. at a small angle: but downcast portions dip at all angles around the flanks of the mountains, as also round the vicinity of some of the larger upland basins and plains that lie upon the shoulders of these mountains, and thus indicate the origin of these enclosed plains to be generally due to a depressed or downcast condition of the strata between the surrounding faults, rather than to any past physical agency connected with atmospheric or climatal conditions, such as glacial excavations, waste by atmospheric evaporation or from infiltration of the decomposed elements through their subterranean outlets the katavothra that exist in them all.

Schists and Shales.

The next series of rocks, occupying large areas, but very much lower groups of hills and ridges than the former, consists of brown, grey, and greenish schists, quartzite, and shales, of considerable thickness, much disturbed, dipping sometimes at high angles, and having volcanic rocks protruding through them in several places, as in the eastern extreme of Crete, at Eremopoli—in the central, both at the northern and south bases of Ida, at Kaloi Limenes or Fair Havens—and also in the western extreme of the island, near the Platanos River, as shown by the colours on the map accompanying this work. Some of the schistose rocks seem to be micaceous, others to contain only scales of indurated shining shale very like mica, thus giving to some portions of these groups, in combination with their induration, a mineralogical appearance that leads to the opinion that they

are much older than the limestone-masses round the flanks of which they lie, although the direction of their dip, where observed by me, seemed in most cases to denote the contrary. M. Raulin, a French geologist who has lately noticed the geology of Crete, considers some of them to be even of Palæozoic age, and therefore not mere metamorphic rocks, produced by pressure and subjacent heat, which I am disposed to think to be the true explanation of the mineralogical appearance and condition of a large portion of them; and I consider them in great part newer than the so-called Scaglia limestones. Besides, some contain masses of hard fossiliferous limestone with Nummulites, which, after thinning out and running a certain distance through them, disappear and are replaced by friable shales or indurated schists, which in their turn seem to become again replaced by the same limestones.

Some of these schists and shales, however, do really seem to underlie the Scaglia; whilst others, the larger portion, undoubtedly seem to overlie it, and are therefore newer, and, from their positions, appear as if they were thrown off or were cast down from the former during its uprising. They consequently are seen to repose against the flanks of the masses of Scaglia, where great faults and displacements have left them, and not to have been so deposited around them, as now found—although they may be newer, and perhaps represent a distinct geological age.

The same puzzling condition regarding the relative ages of similar schists and shales occurs all over the Archipelago and its adjacent coast, where it has seemed to me to be probably solved by the fact that limestones sometimes replace the shales and schists, and *vice versâ*. They therefore offer an interesting field for an elaborate research of these several groups of schistose strata and limestones, which con-

stitute the major portion of Greece and Asia Minor; for the poverty of fossils amongst these limestones and schists in Crete renders difficult their recognition from a mere transit across their areas. I shall therefore only enumerate the localities in which the limestones were found to be fossiliferous, and in which either Hippurites or Nummulites seemed to be recognizable. There were fossil forms also that resemble *Terebratula*, not detachable, however, but shown by a white crystallized mineral that occupied the original positions of the shells.

Nummulites were found in the limestones of Phalasarna, at the west extreme of Crete; also in the gorge of Myrto, on the south coast, near the monastery of Preveli. In the valley between the ancient Lyttus and Khersoneso they were associated, in one spot, with what I conceived to be Hippurites. The Nummulites occur also, by the showing of M. Raulin, in the limestone-masses that are interstratified with the shales and schists forming the hills on the north side of the Pediada plain. And they occur in the eastern base of the Lasethe, near the ancient Minoa, at the head of the Gulf of Mirabella, and where they and the associated schists are much disturbed.

Miocene Marine Deposits.

The next group of deposits I have to notice, as next in extent and age, are a well-defined series of strata that are generally easily recognized, by their mineral condition and colour, to be of tertiary age, but yet not always so; for sometimes, where they are deposited immediately upon the Scaglia and thus have received a more than ordinary proportion of calcareous matter from the limestone with which they were in contact, they are so indurated, and put on a surface appearance so similar to the grey Scaglia, as to be

easily mistaken for it without the vigorous use of the earnest geologist's best companion, his hammer.

These marine tertiary strata, however, are more generally composed of yellowish-white and grey marls, sands, and sandstones, and also of hard calcareous beds that, both from the mineral characters of some of the strata and the fossils they contain, not only resemble, but seem to be identical with the Malta group of deposits, which are generally considered to be Lower Miocene. In Crete they attain a thickness of more than 1000 feet, but are generally less indurated and less abounding in fossils than the Malta series.

M. Raulin * has given the following list of the fossils he procured from them, in confirmation of their Miocene age :—

Myriapora truncata, *Mich.*
Astræa crenularis, *Goldf.*
—— astroites, *Blainv.*
Clypeaster dilatatus, *Desh.*
—— Tauricus, *Desh.*
—— altus, *Lamk.*
Tellina planata, *Lamk.*
—— elliptica, *Brocc.*
Lucina orbicularis, *Desh.*
—— hiatelloides, *Bast.*
Cytherea multilamella, *Lamk.*
Cardita pectinata, *Brocc.*
Cardium multicostatum, *Brocc.*
Pectunculus pilosus, *Lamk.*
Arca diluvii, *Lamk.*
Nucula Polii, *Phil.*
—— nitida, *Brocc.*
Pecten benedictus, *Lamk.*
—— Jacobæus, *Linn.*
—— pleuronectes, *Linn.*
—— latissimus, *Brocc.*
Ostrea navicularis, *Brocc.*
Ostrea Boblayei, *Desh.*
—— Virleti, *Desh.*
Terebratula ampulla, *Brocc.*
Dentalium sexangulare, *Lamk.*
—— novemcostatum, *Lamk.*
Nasica maculata, *Desh.*
Trochus patulus, *Brocc.*
Turritella acutangula, *Brocc.*
—— triplicata, *Brocc.* ?
—— vermicularis, *Brocc.* ?
Pleurotoma contigua, *Brocc.*
Cancellaria varicosa, *Brocc.*
—— mitræformis, *Brocc.*
Buccinum costulatum, *Ren.*
Cassis Saburon, *Lamk.*
Conus Mercati, *Brocc.*
—— pyrula, *Brocc.*
—— virginalis, *Brocc.*
—— antediluvianus, *Brug.*
Serpula glomerata, *Linn.*
—— protensa, *Linn.*
Lebias crassicauda, *Agass.*

* "Note sur la constitution géologique de l'île de Crête," Bulletin de la Soc. Géologique de France, 2e Série, vol. xiii. p. 455.

The additions that have been made by me to the list do not, I believe, disturb the view that they are synchronous or identical with the Malta group, as I also concluded, from my own researches, before M. Raulin's visit to Crete.

Mr. Jenkins, the able Secretary of the Geological Society, will, I hope, give an account of anything specially interesting that may seem to be connected with the fossils I have recently placed in his hands, or with those which were previously sent to the Society by me, and are in its collection; but I regret to find that my chief collection has miscarried somewhere. The predominating shells are *Echini*, Oysters, Pectens, *Terebratulæ*, and Foraminifera, particularly a fine Heterosteginum; and sharks' teeth sometimes occur, but of small size as compared to those found in the Malta series.

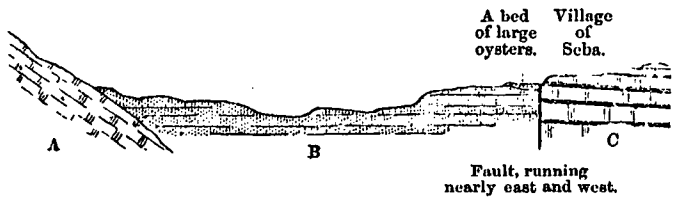
These deposits lie nearly horizontal, having only a slight dip towards the shores of the island from the most elevated parts of the several valleys in which they occur. In the central and widest part of the island, which is also the least elevated part, they are most developed, both in extent and in elevation, attaining a height of about 2500 feet above the sea. On the eastern and western portions of the island, they are generally from 500 to 1000 feet lower in elevation, except in the upland basin or plateau behind the Malaxa ridge south of Khania, where they compose the undulating cultivated ridges lying within this basin, and are capped also by a bed of red earthy gravels of a late date, which, with some similar gravels in other parts, and at various elevations, I shall hereafter notice in their place. Thus these several Miocene deposits show unequal amounts of elevation in different districts of the island, and are varied by unequal development, as well as by unequal amounts of denudation from the encroachment of the surrounding waters during their progressive risings. Hence in some places they have

been swept entirely away, but in others have left here and there just a fragment to show that they once covered the valley, district, or strip of coast upon which they occur.

Besides the above Miocene marine tertiary deposits, there are other marine deposits, of a Newer Pliocene date, here and there dispersed over the lower parts of the island, near its shores, as at Arvi, on the south coast, as shown by some unconformable beds in Kouphonisi, lying off the S.E. extreme of Crete. Two groups of marine strata also occur upon the lower ridges bordering the plain of Ierapetra, shown by a series of grey and brown sands and marls, which lie above and unconformably with a fragment of white calcareous strata and marls, belonging to the Miocene marine tertiaries.

Also near the village of Seba, at the western end of the valley of the Messara, two similar unconformable groups of strata occur, the newer reposing against the former, as shown in the following section. Large oysters occur at the point of

Section in the Valley of the Messara, near the village of Seba.



A. Hippurite-limestone series, north of Kaloi Limniones.

B. Gravels, white marls, and sandy beds; probably a Newer Pliocene marine deposit, or possibly of freshwater origin.

C. Yellow and grey limestones, and marly sandstones, belonging to the Miocene marine tertiary strata?

junction, but I could not determine to which they belonged, nor that the newer strata were purely marine.

Post-Pliocene Beds.

Besides these Miocene and New Pliocene marine deposits,

there are some others of freshwater-origin, of an intermediate age, the description of which, from their special interest, I shall defer until the following post-tertiary deposits have been noticed.

The post-Pliocene or Quaternary age seems to be represented by certain beds of red earthy gravels, that are not of purely aqueous origin, nor were they deposited in a uniform tranquil state, yet they are scattered through the interior of the island, at various elevations.

A very recent littoral deposit, composed of brown sandstones formed, for the most part, of minute fragments of sea-shells now living in the littoral zones in the present sea, also requires some mention.

The latter occurs only upon parts of the coast where it has been shelving, and does not in general exceed a height of more than 100 feet above the present shore. I have noticed this deposit at Phalasarna, at the west end of Crete, as having formed the quarry for the building of the chief portion of the walls and habitations of that city.

The town of Khania also stands upon a fragment of the same, which extends along the shore both east and west of it, and forms the rocky reefs and ridges that in part shelter its harbour; and here also the deposit has been quarried for the completion of the artificial moles, and for the building of the fine fortifications and bastions that enclose the city. Candia and Khersoneso were indebted to the presence of the same deposit near their sites; and the peninsula which sheltered the port of the latter is capped by it.

Hierapytna, on the south coast, also stands upon a fragment of the same sandstone, its amphitheatre having been hollowed out of a low ridge composed of this indurated sandstone.

The red gravels, noticed above as being of a post-tertiary or quaternary age, deserve a few special remarks; for they

are more extended and interesting, occurring in almost every wide valley, and at various elevations—but localized, and apparently not as a general dispersal over the whole area, although, where found, they always cap the deposits. Their origin is doubtful; but they decidedly indicate a drift-influence, from the irregular arrangement of their beds, which are sometimes nearly 100 feet thick; and something more than water-action seems to be required to account for their positions and thickness, and for the large boulders they contain. For in one part of the island they must have been transported from a higher ridge to the south, and from a distance of at least four or five miles over the intermediate hills, as at Kavalomure in the north-west part of Crete, where they contain schistose boulders, three or four feet square, which could only have come from those higher schistose ridges. They lie here too upon the crests of ridges of white marls of the Miocene marine age, and at an elevation of between 400 or 500 feet above the valleys which intersect them, and therefore more than that above the sea-coast, from which they are also distant three or four miles.

These facts therefore, respecting the beds of red earth gravel existing at this locality, indicate a power of transport in connexion with their dispersal which, from their accumulations appearing also to have been so very local, although occurring in several parts of the island, points rather to ice than to water only.

Besides the above-named, there occur other detached groups of the red earthy gravels in the Khania district, as near the mouth of the gorge of Garipa, that descends from Therison, where they are of considerable thickness, and localized like a moraine. Another portion occurs upon parts of the low hills bordering the coast between Khania and the Platanos river.

The same red earthy gravels, with boulders more or less

large, were seen by me in some of the upland valleys—as in the Melaxo basin, above Khania, at an elevation of 1800 feet. Therefore their varied elevations in the north-west part of Crete alone, and their evidently recent date also, show that they owe their origin to a terrestrial or atmospheric condition, rather than to any fluviatile or marine waves of translation.

I have also observed them in the Palaio Lutro valley, in the Lampe district, and likewise in the Mylopotomo district, to the north-west of Axo, where also they cap the older strata at an elevation of about 1000 feet above the sea.

Therefore, as the Cretan mountains were probably not much under their present height during the glacial period, they were naturally in some degree under its influence; and hence I believe that these earthy gravels are the results of that influence; but, from the very southerly latitude of Crete, and the low levels at which I have observed them, that influence was probably not only feeble, but intermitting, according to the season's intensity.

Lacustrine and Brackish-water Deposits.

I shall now notice the scattered freshwater deposits of Crete, before alluded to. These consist of a series of brownish or white marls, sands, and fine gravels (according to the strata they were derived from and in contact with), and are dispersed over various parts of the island, and at various elevations. They contain, in some localities, *Unio*, *Melania*, and *Neritina*, general freshwater types, with others (viz. *Melanopsis*, as well as a *Cerithium*) that indicate a brackish-water condition for the closing period of these deposits; for the purely brackish-water fossils occur only in the uppermost beds of the series—as those I found in the elevated plains of Arkadia, also in certain sands and gravels observed near the village of Vivares, upon the uppermost plateau of the Miocene marine

deposits intervening between Candia and Gortyna, which contain impressions of similar brackish-water fossils.

These fresh and partially brackish-water deposits possess a special interest and deserve notice from their correspondence with the geological conditions of nearly all the larger islands of the Archipelago, also of large areas within the bordering valleys of Greece and Asia Minor, from their having been found to contain several fossils in common, even with the partial examination I have been enabled to make of some of the localities; and they seem not only to show these deposits to be wholly or in great part of the same geological age, but also to indicate, from the positions in which they occur, that a large freshwater lake, of which they are the scattered traces, once covered not only the deeps of the Archipelago and its gulf, but also large areas of Greece and Asia Minor, both in the low valleys that open into them, and on some of the uplands, even at so high an elevation as between 3000 and 4000 feet above the sea, as at Cibyra in Lycia. Some of these freshwater deposits, occurring in the central parts of Asia Minor and in the neighbourhood of Smyrna, were first noticed by the President of the Geological Society, William Hamilton, Esq., and his companion the late Hugh Strickland, Esq. The French geologist connected with the topographical survey of Greece first noticed also the occurrence of freshwater tertiary deposits, with lignites, in the small island of Kilidromi, off the coast of Thessaly, as also at Koumi in Eubœa. My subsequent connexion with the hydrographic survey of the Levant enabled me likewise to identify similar deposits more or less developed upon almost every large island, and upon large tracts of the present sea-board of the Archipelago; and as some of them formed the cliffs of a coast where there is very deep water at present close off them, this at length induced me to conclude that they were probably parts of the bed of a large lake that

once covered not only the area of the Greek Archipelago, but even seems to have had more extended bounds, not yet clearly definable, to the south and westward, since its relics occur also in the valleys of Lycia, especially in the wide valley of the Xanthus and in the Arycanda valley east of it, the lower hills of which are entirely composed of these freshwater deposits, and are separated from the eastern division of the Mediterranean by an alluvial plain and marsh a few feet only above its present level. These freshwater deposits of Lycia being thus beyond the natural bounds of the Archipelago, as well as others I had previously discovered in the south-west part of Rhodes, and also proximate to the sea, thus having no existing feature to indicate their bounds in this direction, suggested the question of the limits of these lake-deposits, and the conjecture that the ancient lake had very extended bounds.

These scattered deposits of the Archipelago, viz. in Eubœa and Samos and Smyrna, have been described by me in several papers in the 'Journal of the Geological Society.' I merely notice them here; but those of Cos and Lycia are described in 'Travels in Lycia,' by Spratt and Forbes.

The fossils found in the larger portions of the deposits present a decidedly lacustrine character, the brackish-water conditions being confined to the upper beds only, where the overlying and succeeding deposits have been preserved from denudation, as I found to be the case in the freshwater deposits of Cos, of Rhodes, of Tenedos, and also in the freshwater deposits around Livonate in Locris, on the east coast of Greece, as shown in the several papers referred to, but especially so in Cos and Tenedos, where they pass conformably upwards into a stratum containing a thin and evidently impoverished shell of the *Cardium edule*, or common Cockle—thus indicating a rather slow transition, with respect to the

upper deposits, from a freshwater to a brackish-water condition, by the attenuated and abnormal condition of these properly marine bivalves.

The purely freshwater character of the Lycian deposits is clearly denoted, too, by their containing *Unio, Lymnæa, Planorbis, Melania, Cyclas,* &c. Those of Cos, except in the upper stratum with the *Cardium,* are also well-marked freshwater types, viz. *Unio, Cyclas, Valvata, Planorbis, Paludina, Neritina, Melania, Melanopsis,* as stated in their description in the work before mentioned.

The importance and interest which, it seems to me, is therefore connected with these detached and scattered lacustrine and brackish-water strata, both in the north and southern portion of the Archipelago, induces me to state here that I have since also traced them eastward from the Archipelago, through the Dardanelles, into the Sea of Marmora, likewise into the Black Sea, through the Kuchuk Tchekmejeh valley, and not by the Bosphorus, as that appears to be a more recently formed rent or channel; for, in pursuing this research, I found that a large part of the Drobrudja, Moldavia, Wallachia, and of Bessarabia bordering the Black Sea and valley of the Danube, were also composed of pure lacustrine deposits, although they had previously been supposed to be marine, through a *Dreissena* having been mistaken for a *Mytilus,* and a Cockle-like shell, but a true freshwater species, an *Adacna,* for a marine *Cardium,*—the same freshwater shell, but slightly varied, being found living in the lakes of the Danube, and not in the Black Sea. Fresh and brackish-water deposits occur also in several parts of the Crimea, and also in the Sea of Azof, near Taganrog. Freshwater deposits were also noticed by Mr. Hamilton near the mouth of the ancient Halys, on the southern border of the Black Sea.

Thus these interesting geological facts show that the whole

of the great, but now connected, depressions or basins intermediate between the European and Asiatic continents were evidently once either a chain of lakes or one entire lake. M. Abich has shown, too, that the Caspian and Ural have likewise been freshwater lakes; and thus, probably, they were all connected during some part of this Lacustrine period. As the relative ages and connexion of these have not yet been fully worked out, I shall merely remark, as there are two unconformable series of freshwater deposits on the northern part of the Archipelago, that there we may have evidence of the lake during its earliest and latest periods, whatever that may prove to be, and that the Black-Sea deposits seem to belong to the latest period of the lake.

I must state, however, that there is a very marked mineralogical difference in the condition of some of these deposits, which renders their identity doubtful; for in some localities they are chiefly composed of loose sands and soft marls of very recent date, in others they are indurated by siliceous or calcareous matter into a hard compact rock, like the "Scaglia."

At the island of Samos, in the Archipelago basin, a square rocky mass of mountain composed of these freshwater deposits, and 1000 feet and more above the sea, was chosen for the acropolis of the capital of the island, from its bold outline and height; yet the crest cliff of this hill was found to be composed of an indurated silicified travertine, being full of the fossil impressions of tall reeds, in which are entangled large shells, like *Melania* or *Bulimus*, and *Planorbis*. The feathery heads of the reeds are remarkably well preserved in the rock at some places, and, moreover, are all in an upright position, just as they grew. Specimens of these rocks are to be seen at the cabinet of the Geological Society. The hard limestone rocks, also, along the shores of the Bay of Vathi, the only harbour in the island of Samos, and situated on the

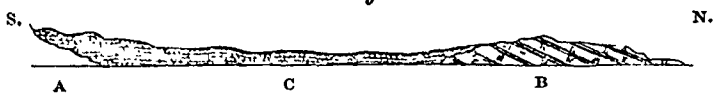
north coast, are full of the same impressions of reeds and casts of large freshwater *Melaniæ* or *Bulimi*; whilst another group in the island, viz. a later series of deposits, which I believe to be of freshwater origin, is almost entirely composed of soft marls, sands, sandstone, &c. The Eubœan, Locrian, and Theban freshwater deposits likewise present great contrasts,—subsequent or contemporaneous volcanic action, distant or proximate, having in some degree no doubt influenced these varied conditions of the strata, as well as their varied positions and elevations. As near Smyrna and in Scio, and also on the opposite promontory, Chesme, the flinty matter (instead of being diffused throughout certain beds to the hardening of special strata, as at Samos) has been segregated into bands of flints and large cherty nodules, more especially where proximate to the trachyte ejections that largely disturbed the area before the close of the freshwater period.

I shall now describe the position and peculiarities of the Khersoneso deposits of Crete, these being the most interesting of all those I found in that island; I shall simply enumerate others, as I have before noticed them with some detail in the work. The Khersoneso freshwater deposits occur in a valley behind the ruins of the ancient city of the same name, between what appears to be the Scaglia limestone (which rises up about a mile south of the valley) and a fragment of the yellowish-white Miocene marine strata, which separates it from the present coast of the Ægean, and forms a flattish ridge from 300 to 400 feet above the sea.

The following section across the deposits from north to south will show their relative position, which is very similar to that of the freshwater deposits of the north-east part of the island of Cos; only there the marine tertiary deposits acting as the wall of separation between them and the sea at one part, since it is not generally so, were thought by Professor Forbes

to be of newer origin—his examination of them having been very slight, in consequence of a severe indisposition preventing

Section north of Khersoneso.



A. Hippurite limestone.
B. Yellowish-white limestone, marls. Older Miocene?
C. White and grey marls, sands, gravels, and sandstones of freshwater origin, with freshwater fossils.

him from being able to do so more minutely; but a subsequent visit to that locality has led me to believe that the marine deposit belongs to an older period, especially since I have also found these freshwater deposits in the central and southern parts of the island.

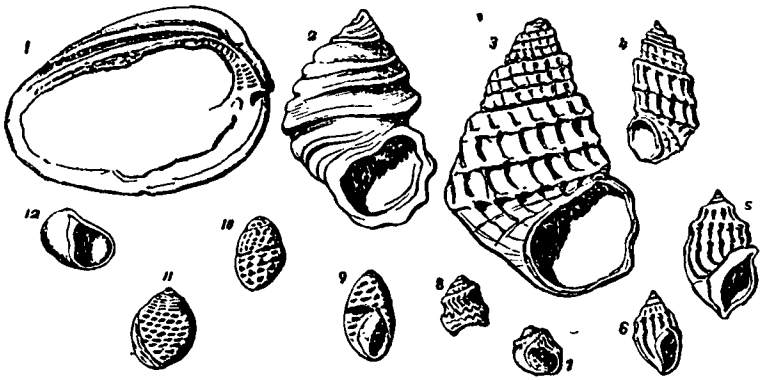
The marine strata enclosing the freshwater group at Khersoneso are from 300 to 400 feet thick; they dip to the north north-west at an angle of 16 degrees, and seem to be a fragment of the Miocene group, from the contained fossils, which, however, are not numerous in species, and consist of Pectens, *Echini*, and Oysters, like those occurring in the Miocene strata behind the town of Candia; but, towards the north shore, the deposit there contains several varieties of corals, forming large tufts and nodules, and so firmly compacted together as to convert the bed into a very indurated calcareous rock, which there, from being at the sea-level, has consequently prevented the encroachment of the sea upon this part of the coast, and thus preserved both it and the freshwater deposits lying behind it from having been entirely swept away, as undoubtedly has been the case in parts adjacent.

The freshwater deposits lie nearly horizontal, and consist of white and grey sands, sandstones, and gravels in the lower part, and white marls in the upper, which seemed to me undoubtedly to overlie the marine there, as in the section, but

so closely to resemble some of the upper beds of the latter, from which they are evidently derived, that without the presence of a band of flints in them similar to the flints in the freshwater deposits of Smyrna and Scio, and of casts of freshwater fossils in the overlying strata, it would not have been so clear to which group they belonged or what was the order of superposition, from the stratification being so nearly conformable, and the mineral character of the strata in contact so similar. However, my final examination of the locality (and I visited it on three or four occasions, for the determination of this particular point, and at distant periods of time) left me no doubt that the freshwater series are more recent than the marine. This is confirmed also by those near Thronos, the ancient Sybrita.

The freshwater fossils occur in bands at Khersoneso, as in the Livonati deposits in Locris, and are numerous; and, generally, they are solid and thick. Some of the species are identical with those found in Rhodes, Cos, in the Lycian, Eubœan, and also in the Locrian deposits—there being two species of *Neritina* common to all, as well as a *Melanopsis* and a *Unio*. These have been recently described and figured by Mr. Jenkins in the July Number of the 'Scientific Review,' to whose examination they were submitted by me, in preparation of my geological remarks upon Crete. As these fossils are interesting and new, and are considered by him to be rather anomalous forms than true types, I shall give his descriptions in detail, being called upon in these following remarks also to show my reason for differing from the conclusion he has drawn from these supposed anomalous forms, as well as in regard to the relative age of these freshwater and marine deposits of Crete, and of the synchronous deposits of the Xanthian valley and the Lycian uplands. The fossils from the Khersoneso deposits described by Mr. Jenkins as

new are *Unio Cretensis*, *Neritina*, two species (*Spratti* and *abnormis*), *Melania anomala*, *Cerithium reticostatum*; it contains also *Melanopsis Bouei*, and a fragile *Planorbis*, very small, of which only one specimen was obtained perfect, and which broke in being transported, but which Mr. Jenkins did not see, and therefore was led to believe there were no pulmoniferous Mollusca in the deposit. To be as brief as possible, however, in my necessary explanation upon Mr. Jenkins's remarks and opinions, drawn from an inspection of these



1. *Unio Cretensis.* Crete and Locris.
2. *Paludina.* Cos and Rhodes.
3. *Paludina.* Locris.
4. *Melania anomala.* Crete.
5, 6. *Melania Bouei.* Crete, &c.
7, 8. *Neritina abnormis.* Crete.
9, 10, 11, 12. *Neritina Spratti.* Crete.

fossils he has figured, I will simply state, first, that they appeared to him to indicate by their characters an age older than that of the Miocene marine beds in Crete and Lycia, and not a more recent date, as concluded by Professor Forbes and myself, from our observations of those existing in the Xanthian valley. He also endeavours to show, in proof of it, that our conclusions regarding the *relative positions* of the freshwater and Miocene marine beds of the valley of Xanthium were erroneous, as we have, it appears to him, mistaken, in the fragment of Miocene deposits specially described under Arsa, on the Massacytes Mountain, "false bedding for strati-

fication;" for, he says, they "dip the wrong way" for the correct inference of their being older than the freshwater deposits that alone fill up the great Xanthian valley below. Secondly, that many of the fossils from these deposits of Crete, Cos, &c., are not true types of species, but anomalous forms produced by the influence of salt or brackish water; and thus they indicate them to belong to brackish lagoons or estuaries. Thirdly, that as they thus indicate fauna of a brackish lagoon, and not a freshwater lake, hence also the error of my previously given opinion regarding the Levant deposits of Cos, Rhodes, and Lycia as being indicative of the existence of a large freshwater lake having covered the entire area.

I shall simply reply in the order they are here noted. First, that Mr. Jenkins has evidently himself inadvertently viewed "the wrong way" our map or section of the valley of the Xanthus, given in the geological chapter of our 'Travels in Lycia,' and which he also copies, to illustrate his own view but real error,—*the west being put for the east,* and *vice versâ,* upon his section, and thus our reasoning reversed; for we distinctly state that the section is from under Arsa, on the flank of Mount Massacytes, across the valley; and that the Miocene deposits we describe there were "dipping to the west," thus towards the centre of the valley, and *not from the centre,* as Mr. Jenkins erroneously conceives that we have made them do. The conclusion of that able observer, my lamented companion, in respect to the freshwater deposits of Lycia, Cos, and Rhodes being newer than these scattered Miocene deposits in association with them, therefore remains undisturbed when Mr. Jenkins's accidental mistake in regard to the position of the Miocene marine deposits in that valley is rectified. And it likewise occurs to me, that, if the fossils are not true types, but merely anomalous forms, as Mr. Jenkins seeks to establish, they seemingly are not in a condition from

which sound reasoning regarding their geological age could be drawn, and thus would throw doubt upon his conclusions, even if the above error regarding the Lycian deposits had not controverted them.

I am, however, induced to differ entirely from this view regarding the anomalous character of the shells, and consider that their great thickness, size, and singular tendency to form corrugations or ribs, noticed by him, and considered as abnormal conditions, indicate a highly pure and favourable condition of the water, and therefore a highly healthy condition of the secreting membrane of these purely freshwater animals so possessing these peculiarities; for in some cases the shells are remarkably large and thick, as seen in the *Paludinæ* of Cos and of Livonati, and therefore they are not in a deteriorated condition from living in water noxious to their habits; but, in all probability, a more highly calcareous condition of the water in these localities than usual enabled this full development and thickening of their shells to follow the naturally healthy secreting powers of the animal. This thickening or developed condition exists also in the *Melania* reversed from Khersoneso, which is thus reversed like the *Thysa* now living in Sicily, but, in consequence of being reversed and thick, is named by Mr. Jenkins *Melania anomala* in support of his opinion regarding the brackish-water influence having caused this peculiar form. But this is an exceedingly well-formed shell, possessing the same tendency to corrugations as the others; and nearly a dozen were procured by me from the Khersoneso deposits, all of which were precisely similar: it therefore possesses characters peculiarly its own, as if a distinct genus or species, and not an abnormal form of some other preexisting or associated *Melania*; for none other like it, with the usual direction of the whorl, were found.

I am chiefly led to this opinion, and also the impoverishing effect of salt or brackish water upon both the animals and their shells, whose natural habitation is either purely fresh or purely salt water, from having observed that in all such brackish-water lagoons occurring around the shores of the Mediterranean, in which the common Cockle (*Cardium edule*) is found living, it is so poor as to be hardly eatable, shrinking to a mere tough muscular skin after boiling; and the shells are also so thin in consequence of its impoverished state, that, although they may attain the size of their brethren in the sea, they seldom weigh more than half the purely marine living shell; for on comparing and weighing cockles of equal size to test this fact, the cockle from the sea averaged over 100 grains, and the brackish-water-lagoon cockle averaged only 50 grains. This has been observed by me on the coasts of Greece, Asia Minor, and Africa; and the same is shown to have been the fact in the later period of the Levantine Lake, when it only became brackish, and the *Cardium edule* was introduced into it, and then multiplied upon parts of its shallow shore, as shown in the before-noticed Cockle found in the uppermost strata of the Cos deposits, and also in those of Livonati in Locris, in both of which the fossil cockleshells are remarkably thin and light as compared to a true marine fossil of the same species. Mr. Jenkins has, however, referred to a French observer in support of his opinion upon the possible modifying effect of sea-water upon a fresh-water shell, who proved, fifty years ago, that they nearly all died when four per cent. of salt was added—a natural result, as four per cent. brought the water to the saline density of the ocean: and he shows that only those with opercula were able to live, thus indicating the necessity of shutting it off, and the impoverishing effect of a noxious element not natural to the habits of the creature or favourable to the growth of the

vegetation it lived upon. Excess of secretion and the thickening of the shell, therefore, seem to me to require the natural element of the animal in order to maintain its natural food and healthy conditions; and thus, in pearl-oysters and mussels, or in river-Unios, we find abnormal secretions around a weakened part or a foreign body, but more or less dense according to the state of health of the animal; whilst the brackish-water *Cardium* is too feeble even to thicken any part of its shell to its natural condition. Thus its natural habitat seems a first necessity for any unusual enlargement or thickening of the shell of a mollusk.

In offering this explanation of my reasons for disagreeing with Mr. Jenkins's views, I am aware that I am differing also from the view advanced by my lamented companion Professor Forbes, when describing the varieties of form observed in some of the Cos fossils—he having then put forth the idea that they were probably the effect of a transition from a fresh- to a brackish-water condition of the lake—an opinion which Mr. Jenkins has adopted. But he has also greatly enlarged upon it, inasmuch as he considers all these deposits of the southern part of the archipelago as of brackish-water origin.

I must next refer to the lagoon-opinion itself, since Mr. Jenkins seems to think that at least those in the southern part of the archipelago are not lacustrine, but merely deposits that were formed in coast-lagoons, into which rivers carried their freshwater fauna, and the adjacent sea poured its saltness to modify their forms, and therefore that my great-lake view was not a probable one. But, if Mr. Jenkins's lagoon-view be correct, there must have been some eight or nine lagoons in Crete alone; and, to have been so, all these deposits, and also all in the southern islands of the archipelago, must have been below the level of the sea some 100 or 200 feet, as the deposits are more than that in thickness; and consequently,

as these islands would then have had all their areas reduced in size very considerably, Crete alone would have been divided into several—into a complete archipelago of islands, in fact; yet in each there must have been rivers of such magnitude pouring into its lagoons as to produce Unios and other mollusks that can only be now found in the largest rivers of the continents, especially if we consider the large and thick fossil *Paludinæ* of the Cos, Rhodes, and Locrian deposits; for it is only the larger rivers, such as the Danube, Nile, &c., that have them of an equal size now. Thus each of these lagoons and limited areas must have had a very large permanent river, both to accumulate such an amount of deposit as exists at these localities, and also to maintain such freshwater forms as *Unio*, *Paludina*, &c., so as to accord with Mr. Jenkins's view. Therefore the lagoon-theory is inadmissible. An estuary origin, too, for each of the Cretan localities (which Mr. Jenkins also assumes as probable) is still less acceptable, especially for a tideless sea, like the Mediterranean, where no such estuary deposits, with such purely freshwater types of fossils in them, are now forming. Hence my large Levantine-lake theory is still, in my humble opinion, a logical and natural conclusion from the great depths which now surround these islands, and from the general facts and physical phenomena connected with these several named fresh- and brackish-water deposits of the Greek archipelago.

But I have also conjectured that the lake had still more extended bounds, from the absence of any recognizable limits to those deposits existing in the southern valleys of Lycia, and in the southern part of Rhodes and Crete, and consequently that the entire Mediterranean constituted its only natural limits.

The doubting reader and geologist will, however, naturally say, If it were so, why have we no confirming proofs around

its shores? My reply is, that I believe they exist, and only want recognition, and that in several localities around its margin the geological facts tend to such a conclusion. These I shall severally point out.

But before I proceed to touch upon the Mediterranean localities where freshwater deposits exist, I feel it desirable to observe that, in the Archipelago, we have, without doubt, valleys and parts of the coast where these deposits are still below the sea-level; and in others they formed so narrow a strip when elevated above the sea as to have been long since washed away. So that if I were to take the reader only to those parts of the coast where they are now absent (and that would be along three-quarters of the coast), he would possibly doubt the former existence of a freshwater lake covering the whole archipelago, although it must have been so. So also in respect to similar conditions of the Mediterranean shore where, it being very steep in many parts, and composed of older strata, they may have either been washed away or are still submerged below the deposits formed at the bottom of the present sea, or else where the newer deposits which covered them have been since elevated above the sea, and form the coast-ridges, as in Algeria and Italy; the freshwater deposits would of course be wanting near the coast, and found only at the heads of the valleys opening into it.

The first of these deposits I shall notice (from its proximity to Crete, and its marginal position) was discovered by me at Dernch, on the African coast directly opposite to Crete. I shall therefore touch generally upon the geology of that coast, to show its peculiarity and the remarkable contrast of feature also of these two opposite margins of the Mediterranean.

For the upheaving energy along the northern margin has been more than ordinarily active and violent, from having been more concentrated and local in its influence; it thus expended

its energy in the uplifting of isolated and limited masses of the strata into high peaks and ridges, that sometimes rank as physical features of the first order; whereas upon the whole of the African coast, from the western borders of Tripoli to the Nile valley, the land has been subject only to movements that, although they were probably of remarkable extent, produced only a small amount of elevation; for the Libyan hills, like the steppes of Russia (although so much older), are comparatively without a feature that presents a decided character, beyond level and sometimes widely extended plateaux,—the more elevated being very steeply scarped—no ridge or plateau along the whole coast having its strata much displaced from the horizontal position, or presenting a decisive peak as a feature or landmark that renders one part recognizable from another, even when seen from the sea at only a few miles' distance.

The one uniform character of its inland-hill features is thus a series of flat, arid plateaux, deeply intersected by long and narrow valleys, and variously elevated or depressed between lines of faults, well marked by their having deep scarped faces along the line of those faults, and seldom exceeding 500 or 600 feet in height, except within the elevated and consequently more wooded and fertile promontory of the Cyrenaica, where the upper plateau attains a height of 2000 feet. The lines of principal faults run about S.S.E., as indicated, too, by the sudden flexures of the coast-line near the greater faults, such as the turn of the coast forming the Gulf of Syrtis, also at Cape Ras-el-Tin, into the Gulf of Bomba, on the east side of the Cyrenaica, and further eastward, at the Gulf of Solloom, with several smaller ones between it and Alexandria, and as shown by the smaller bays or flexures.

The deposits, as far as I could observe and examine, were generally very similar throughout—excepting a freshwater deposit at Dernch, upon the coast of the Cyrenaica, that I

shall presently notice, and also a strip of low sandstone ridges and red earthy marls of recent date, lying along the greater part of the coast, and covering the lower areas, a section of a coast-cliff of which is here given. The sandstones are very

Section of a Sandstone Cliff at Ras-allem Ghommet, forty miles east of Solloom Bay, coast of Libya.

(Height of cliff about 60 feet.)

a. Yellow calcareous sandstone, with minute fragments of marine shells.
b. Red earth, from ½ foot to 3 feet thick, containing existing land shells, and passing into the sandstone beds above and below, very imperceptibly sometimes, but very abruptly in other places.

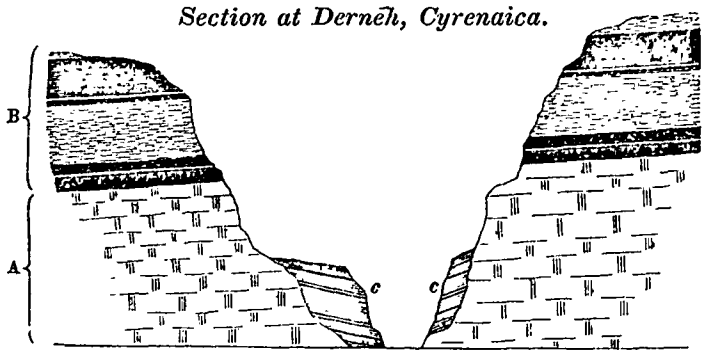
interesting also, as being clearly indicative of great upcasts and downcasts that have recently occurred and produced them, by the vast waves of translation that in recent times must have swept over these lower areas; for none of the strata show a sufficiently long condition of submergence to be a purely marine deposit with living marine fauna, none having an entire marine shell, but merely fragments of the more durable of the littoral species, whilst the land shells in them are generally perfect, having escaped destruction from their lighter specific gravity, and from being, no doubt, partially filled with air when swept from the surface with the grosser matter of earth and stones by the wave of translation that evidently commingled them together with the marine sand, at several successive movements or subsidences of the land.

The older group of strata seems to be for the most part identical with the Malta deposits, but more developed, having strata that are apparently lower in the series than what are seen in the Malta group; and these lowest and oldest strata are full of Nummulitic shells resembling those of Crete,

although in strata of a very different character and colour, being here a white or cream-coloured limestone, and passing *conformably* upwards into yellowish marly sand or sandstone resembling the yellow free- or sandstone of the Malta deposits, with many of the Malta fossils in them. And at Solloom, to the east of the Cyrenaica, the *Nautilus zigzaggia* was found, which is known nowhere else, I believe, but in the London clay, the Paris basin, and the Malta beds.

The lacustrine deposit existing at Derneh, on the coast of the Cyrenaica, before noticed, I am induced to dwell upon more fully, as it attains a thickness of nearly 100 feet, and is composed of whitish marl and travertine. It flanks the entrance to a narrow steep-sided valley, like a gorge, which cuts into

Section at Derneh, Cyrenaica.



A. Very white compact limestone, containing large Nummulitic shells, and about 250 feet thick.
B. About 200 feet of whitish-yellow, grey, and white sandstones, marls, and calcareous beds, with Oysters and Pectens, and several Echini.
c. Travertine and white sandy marls with freshwater shells and impressions of the stems of reeds, &c.

the high level plateau lying behind the town of Derneh. The freshwater deposits occupy the lower part of the gorge, which they originally filled to the height of about 100 feet above its present bed. It contains in some of its strata (the travertine beds especially) abundant impressions of the stems of some reedy plant, as well as a few fragile fragments of freshwater

shells, a cast of one of which, a species of *Lymnæa*, I procured almost perfect; but yet I fear it is not identifiable. There seem to be other relics of the same deposit near the centre of the north coast of the Cyrenaica, at about two miles to the east of Ras Halal, where, however, I could not closely examine it, from the hostility of the Arabs at the time of my visit; but, from the unusually soft marly character of a narrow strip of the deposits skirting the scarp of the Nummulitic rocks there, and from the examination of the fragments in the ravines near the sea-shore under them, the evidence appeared to me satisfactory that a relic of the same Lacustrine period existed over this part of the coast also, but reaching an elevation of nearly 600 feet above the sea, yet forming only a narrow strip, as at Derneh, between the Nummulitic strata and the present sea-shore. These evidences would seem to show that the Lacustrine deposits originally flanked the whole coast-line as a narrow strip just as in some parts of the Archipelago, and that the upraising of the central and highest part of the Cyrenaica, by which the whole was lifted to an elevation averaging more than 1000 feet above the general height of the land between it and Egypt or Tripoli, was subsequent to this freshwater period, whatever that may be, and (from the position of the freshwater deposits in the gorge of Derneh) that the deposits thus existing upon this margin of the Mediterranean basin are without any apparent barrier between them and the present sea, which seems to indicate that they are not merely relics of a purely local and limited lagoon or lake disconnected from the great Mediterranean basin, but, on the contrary, that the waters of this saline basin must have been at one time fresh, and therefore that the Straits of Gibraltar must have been closed—perhaps by the very Miocene land that my lamented friend, the late Professor Forbes (but in reference to another question), has supposed to

have extended beyond the Canary and Madeira Islands from Spain and Africa.

I must now briefly notice some other localities with fresh-water deposits bordering the former limits of the Mediterranean basin. At Gadames, in the north-west part of the regency of Tripoli, a lacustrine deposit occurs, which has recently been noticed by some French officers, which, from its position and the low tract of desert lying between it and the Mediterranean, may possibly have been a marginal deposit during the Lake period, as that at Dernch appears to have been. In reference to the lacustrine deposits in Algeria, I give the following extract from the 'Histoire des Progrès de la Géologie de 1834 à 1845,' par M. A. d'Archiac: Paris.

"*Afrique Septentrionale.*

"Dans les provinces de Constantine et de Bône, des nappes ondulées de tufs calcaires qui s'élèvent à 800 mètres au-dessus de la mer, et à 150 mètres au-dessus du fond des vallées, recouvrent partout les plaines, les collines et les plateaux. Leur formation est antérieure au creusement des vallées et aux dernières dislocations du sol. A Constantine, où les calcaires compactes sont redressés et courent de l'E.N.E. à l'O.S.O., les *Lymnées* et les *Planorbes* se trouvent dans la partie supérieure du tuf: plus bas viennent des couches d'un aspect cristallin; l'une d'elles, dont la teinte est rose, a été employée comme marbre dans un grand nombre de monuments anciens.

"En décrivant les couches tertiaires supérieures qui constituent des collines au sud et à l'est d'Alger, M. de Verneuil les a divisées en deux étages, l'un calcaire, et l'autre placé dessous, qui est marneux. Ces étages sont inégalement développés, et autour de la ville les calcaires sont plus épais que les marnes. En s'avançant vers le sud, au contraire, ces dernières s'accroissent aux dépens des premiers, et finissent par

les remplacer tout-à-fait. Les environs de Doueira sont composés de marnes, de grès, de poudingues et de sable, dont la puissance est d'environ 100 milles. *Les marnes inférieures aux calcaires renferment des lignites.*

"Au camp de Smendou entre Constantine et Philippeville, on remarque un dépôt *lacustre de cette période, semblable à celui des Bouches du Rhône et renfermant aussi des lits minces de lignite.* C'est composé de marnes grises ou brunes, peu solides, avec de coquilles et des empreintes de poissons.

"En s'éloignant des côtes, on suit la formation tertiaire supérieure jusqu'au sommet des montagnes autours de Mascara; mais elle ne paraît pas s'étendre beaucoup vers l'E. Peutêtre existe-t-elle aussi avec les mêmes caractères dans la province de Constantine, *où elle est plus généralement représentée par des dépôts lacustres. Ce sont des calcaires blancs, un peu crayeux,* passant à des calcaires compactes roses, dont nous avons déjà parlé, et renfermant des Bulimes et des Hélices. Quelques lits d'argile ou de marnes séparent les bancs calcaires que l'on observe aussi dans les plaines du Heralka au sud de Constantine, et plus à l'ouest près de Selif et d'Aîn-Teurk.

"Des dépôts marins, que nous regardons comme quaternaires et qui paraissent être à peu près du même âge que le conglomérat, se trouvent au bord de la mer sur presque toute l'étendue des côtes. Ils commencent par une couche d'argile plastique qui manque souvent, puis vient au-dessus une série de bancs calcaires plus ou moins sableux, avec des coquilles exclusivement d'espèces vivantes. On observe ces assises quaternaires à la calle au cap de Garde, à Djidjel, à Alger, à Cherchel, à Oran, à Rachgoun, et probablement au delà de l'Algérie à l'est et à l'ouest. Elles se lient vers le haut à des dépôts lacustres remarquables par leurs coquilles et des empreintes végétables, et qui passent insensiblement aux tufs des eaux

thermales. Ces derniers se sont continués jusqu'à nos jours et se forment encore sous nos yeux.

"*Des sédiments lacustres, souvent isolés, se voyent à Bâl-el-Ouad, près d'Alger, au-dessous* de Mostaganem, entre le Chelif et la Mêna a-Mesra, à la source de l'Ouad Fkân-a-Ain, l'Efs Afa. Le *Melanopsis buccinoidea*, qui vit aujourd'hui dans les eaux du pays, s'y trouve fréquemment."

Following now the northern margin of the Mediterranean, lacustrine deposits are found to occur in all the principal valleys opening into it, and which must have been each shallow areas or inlets of that basin at the Lake-period; or they were each detached lakes. But newer groups of strata seem in general to be the only deposits lying between them and the Mediterranean, as in the north-east of Spain, in the south of France bordering the Rhone delta, and in Tuscany upon the upper part of the Arno—just as exists in Algeria, as shown by the above extracts. Others also are known to occur in Southern Italy, but limited, because Newer Pliocene deposits predominate in the peninsula and thus probably cover the larger portion of freshwater strata older than themselves. And it was in an Italian deposit that the *Lymnæa Adelina* was first found and figured in the Brussels 'Transactions,' although its exact locality was not known, which fossil was afterwards found by Professor Forbes and myself in Lycia, and again by myself subsequently in the Livonati deposits of Locris, thus possibly indicating them to be synchronous, even if they were not parts of the same lake, as I with deference conjecture. Lacustrine deposits have also been noticed on the margin of the valley of the Po, and, I am led to believe, in some of the valleys on the Dalmatian side; likewise I believe they have been discovered in one of the Balearic islands. All these, with some anomalous deposits containing a mixture of freshwater and marine fossils in some of the Pliocene de-

posits in parts of Italy, tend to support the large-lake conjecture as deserving consideration with the view to its confirmation or confutation. Besides, where there are such evidences of great upheavals of some of these Pliocene deposits, and therefore of the margin of the Mediterranean basin, at the Lake-period, to heights several hundred feet above their original level, we must suppose that subsidences have taken place quite as great and extensive, to explain their absence in other parts. It is of interest also, and perhaps of importance in the question of their age, to find that some of these Oriental and Western lacustrine deposits have recently been ascertained by Professor Heer, from their fossil flora, to be of the same age; and he also, I believe, considers them to be Upper Miocene or perhaps Older Pliocene, but not Lower Miocene.

Egypt too has its widely scattered relics of fossilized (or, rather, silicified) trees and siliceous sand, lying upon the surface of some of the upper plateaux confining the Nile, that are undoubted evidences of some wide-spread freshwater action, which, from the positions in which I have seen the débris of fossil wood and scattered fragments of the overlying siliceous sandstone strata, appears to have been rather that of a lake than of a river: they therefore may be the relics of an old lacustrine condition, since the origin of the fossilized trees, from their elevation, position, and wide extent, cannot be well explained, for they occur on the ridges and plateaux much above and beyond the limits of the Nile valley,—unless it be supposed that freshwater deposits once capped these ridges, but, having been composed for the most part of soft marls and fine sand (such as the Nile now supplies) and therefore easily decomposed, have probably been swept or blown away as dust under the drying sun of Africa, and its violent south winds, during the large interval of time elapsed—as some of the upper strata of the marine deposits, upon which

they lie, have in some parts been degraded, leaving only some of the Echini and few of the fossils they contained, on the surface once covered by them.

The conversion of these Mediterranean basins (for it is probable there were several) from salt water to fresh, and again from fresh to salt, as now, in accordance with this view, may appear to some to be a great difficulty to the acceptance of the theory. Yet it cannot be very satisfactorily concluded that each locality with evidences of lacustrine deposits upon its margin was a purely local lake, or coast lagoon, where these deposits often amount to a considerable thickness, and are also only separated from the Mediterranean by alluvial or post-Tertiary or Newer Pliocene strata. I am therefore induced to offer a conjecture regarding the possible condition of the Mediterranean at this period—namely that it is very possible the waters were never wholly converted from salt to fresh in the greater depths of their areas whilst these lacustrine or brackish-water fossils were being deposited round their margins; because it is possible that it was only the superficial portion, to the depth of about one hundred fathoms or more, that was fresh or brackish. I offer the idea for the consideration of those who may doubt the probability of the superficial waters of a basin remaining fresh or brackish whilst the deeps retain their original ocean saltness. But it is a well-known fact that fresh water will float upon salt water in a distinct stratum if it is confined in a deep vessel and the deeper parts kept free from agitation—and that it will remain so for a long time without becoming of uniform saltness, owing to the greater specific gravity of the latter.

Now, on considering the configuration of the several areas represented by the eastern and western divisions of the Mediterranean, the Greek Archipelago, Sea of Marmora, and Black Sea, and that the depth of the submarine plateaux separating

them from each other and from the Atlantic does not exceed 50 fathoms in the Dardanelles, and between the two Mediterranean basins (viz. the Strait between Tunis and Sicily) may not have been much more, whilst the centres and larger portions of these several areas are from ten to twenty times as deep as the existing banks of separation between the deeper waters, it appears evident that only their superficial waters are connected and therefore under the influence of circulating currents and disturbance—as I have shown, in the Appendix No. II. (upon the question of deep-sea currents), that we could never detect any appreciable current below 100 fathoms, and that in the Sea of Marmora we have something of an approach to the very condition I have suggested —that is, the possibility of lacustrine deposits occurring only in the superficial zone of a confined sea; whilst below the depth of 50 fathoms (which is that of the barriers between it and the Black Sea and Mediterranean) there was apparently no appreciable current: *below that depth the waters were all of the same specific gravity and saltness as those of the Mediterranean, and only the surface-waters to the depth of* 50 *fathoms were diluted by the fresher waters of the Black Sea.*

Now if this condition can exist with water only partially fresh, it seems natural to infer that if the rivers flowing into the Black Sea were sufficiently large to convert its waters into purely fresh water, so that its superficial supply to the Sea of Marmora might be perfectly fresh also, we might have the freshwater animals which lived in the former also living and being deposited in the shallow depths of the latter, whilst in the deeps salt-water and purely marine organisms would alone be living, and alone become imbedded in its deposits.

I offer the idea with great diffidence, but with the feeling that a recognition of such a condition will help to explain many of the anomalies observable in regard to the in-

termixing of apparently brackish- and freshwater shells in some of the recent tertiary strata upon the Mediterranean borders, and account also for the undisturbed passage in other localities of marine into freshwater deposits, and *vice versâ*. And, as an illustration, I more especially refer to the Purbeck series of marine and freshwater deposits, to which I believe the theory is perfectly applicable, and it most completely explains the position of the little *Corbula*, &c., below a conformable series of freshwater deposits, by supposing that they were all deposited in an enclosed and deep basin that had formerly been an arm of the sea, but in which pure sea-water remained and a purely marine fauna still lived, whilst in the surface-zones there was both a fresh- and a brackish-water condition and fauna. This therefore I believe to be the real explanation of the Purbeck anomalies that have so long puzzled geologists.

I have one more fact of interest to notice in connexion with the geological phenomena of Crete, viz. the discovery of the remains of a Hippopotamus, *H. minor*, near Kritza, on the north-east flank of the Lasethe Mountains. The information regarding it was first obtained by my lamented chief, the late Captain Graves, who received some fossil teeth of this Hippopotamus from the late Mr. Ittar, of Candia, about the year 1842. Captain Graves having forwarded them to Professor Owen, they were deposited in the Museum of the College of Surgeons; but the exact part of the Kritza district whence they originally came was not then known to Mr. Ittar. Not long after, M. Raulin, a French geologist, visiting the village of Kritza, on the eastern side of the Lasethe Mountains, was so fortunate as to find there the fossil jaw and some teeth of the same animal, and was informed by the natives that they came from an upland basin above Kritza, called Katharo, and at an elevation of nearly 4000 feet above the sea. M. Raulin

visited this basin, and says it is about two miles long, and half a mile wide, in the centre of which are valleys intersecting brown clays and sands, from which were procured the Hippopotamus-remains purchased by him at Kritza, and consequently the deposits are conjectured to be of freshwater origin.

It is to be regretted, however, that none of the bones of the animal were found *in situ* by M. Raulin, in confirmation of the local report regarding its place of discovery, as it appears to have been brought to Kritza several years previously; and no doubt the teeth obtained from Mr. Ittar by Captain Graves were a part of the same, for I never heard of any being found in any other locality in Crete.

The explanation of how these animals were deposited in this upland basin, considering that their usual habitat is a delta or low river-course instead of a mountain-stream or lake, involves the necessity of conceiving great physical changes in the relative levels of sea and land since they existed in Crete, the exact period of which, however, we have no means of determining, in consequence of the limited and dubious character of the information regarding them.

But the highway of their migration into Crete is a question of some interest. The most natural seems to have been from the nearest point of Asia Minor; and therefore, apparently, the deep and wide channels that now lie between it and Crete cannot have then existed. Yet the depression to an amount of at least some 3500 feet below its present level of the part of the island where the Hippopotamus-skull and teeth were found, requisite to bring the plain within reach of the animal, would somewhat enlarge, instead of diminishing, these channels, supposing there had been no corresponding uprising of any intermediate part of the sea-bed; and therefore, as fresh water is the natural habitat of the Hippopotami, these animals and the freshwater deposits of Lycia, Rhodes, Cos, and Crete

may probably have been contemporary. Some of these channels must therefore have been at least from twenty to thirty miles wide; and it consequently becomes a question whether they were likely to have swum such wide channels, even if the water flowing through them had been fresh water or only slightly brackish, supposing them to have really been contemporary with these deposits and my Lake-period. Great as the swim may appear, however, I am induced, nevertheless, to believe it to have been not only possible, but a feat of no great difficulty to such amphibious creatures, particularly when under the influence of that strong instinct for migration at its due season which must have guided them, as it marvellously does the birds and wild herds of the present day, even causing them to risk many dangers to effect it; and I am especially led to believe in this possibility by the following fact—namely, the attempt of a half-grown Macedonian boar to swim across the Gulf of Saloniki, which was witnessed by the crew of one of the boats of my ship, in the autumn of 1862, when the animal had reached a distance of fully *three miles* from the eastern coast of that gulf. Lieut. Drew, who was in charge of the boat at the time, relates that, whilst sounding off that coast during a very calm, clear afternoon, he was surprised to perceive some animal swimming vigorously away from the nearest land, and evidently directing its course to Mount Olympus, on the Thessaly side, which, from the clearness of the day, appeared unusually distinct and near; and on pulling up to the creature, it proved to be merely a half-grown boar. The reader will be surprised to learn that the entire distance across is about twenty-four miles; yet here was a bold attempt of a land-animal to swim that gulf, even although its waters are salt instead of fresh, and therefore an element so much more contrary to its natural habitat than to the Hippopotami; and it seems, from the

little exhaustion shown by the savage creature, and taking into account the length of time its head was under water during the necessary operation of getting it in by its hind legs, that, had the weather continued calm (which at that season was usual), there was little doubt that he would have accomplished it; and I believe, too, as the natives assert, that it is no uncommon feat for these animals to cross from one side of the gulf to the other.

This reference to the migration of Hippopotami in some remote but uncertain geological times reminds me of another probable line of their migration into Europe, but from Africa instead of Asia, viz. by way of both Sicily and Malta, and therefore, no doubt, along a subsequently submerged land that connected these islands with each other and with both Tripoli and Tunis—or probably they were only separated by channels less wide than those above noticed in the Archipelago. For I have recently found that a submerged plateau exists nearly in a direct line between Malta and Tripoli; so that, if elevated about 200 fathoms, there would be left only one or two similar or even narrower channels between them: I have in consequence termed it the Medina bank, after my ship. Also if the Adventure plateau, connecting Sicily with Tunis, were similarly raised, it would present greater facilities of communication by dry land: this fact was first made known by the soundings obtained by our veteran Mediterranean surveyor, Admiral Smythe, who noticed it as an interesting feature in connexion with the former physical geography of the Mediterranean.

As the remains of two species of *Hippopotamus*, viz. *H. major* and *H. minor*, have been known in Sicily for many years, and occur in caverns round its coast in surprising abundance, the recent discovery of the same two species in two caverns in similar positions in Malta, which I shall

briefly notice, renders the question of their migration to these positions from Africa or Europe one of great interest, surrounded as both islands are at present by a perfectly salt sea—an element apparently never resorted to by them except under extraordinary and exceptional circumstances of necessity. And, from the arid, waterless nature of the African coast at present, it is evident that the climate and terrestrial conditions of that coast must have been very different when those animals existed from what it now is; for they can hardly have come from the Nile valley by the African coast, without rivers between, or the water of this great sea being fresh instead of salt.

The following notice of three Malta bone-caves with Elephant- or Hippopotamus-remains, which will close my remarks upon the subjects connected with the question of this island also having formed part of a line of communication between Europe and Africa, will be very brief, fuller details being reserved until my friend Dr. Falconer is able to bring out his description of the remains found in them.

The first I shall mention, from being the first authentic discovery of Hippopotami in Malta, was broken into in the middle of the year 1858, by the workmen who were quarrying for stone for the new dock, in the hard semicrystalline limestone scarps overlooking the south coast of the island, and at a few hundred yards only from the lower Phœnician ruins of Crendi. It was a small cavern; and in its stalagmitic floor a great quantity of bone and teeth of a large animal were imbedded; but, the stalagmite being unusually hard, few were procured perfect; and the chief portion of the floor of the cavern being useless for the purposes of the quarry, was immediately ejected, with the other débris, down the face of the scarp.

Arriving in Malta a few months after, and surprised to

see some of the fragments, with imbedded teeth, exposed for sale as really fossils of Malta, I proceeded to the spot, with my friend W. Medlycot, Esq.; and after carefully searching over the débris, and patiently hammering at several blocks, we were enabled to procure some fine specimens of teeth in a very perfect condition, which, on being forwarded to Professor Owen, were pronounced to be, as I had stated to him it was my opinion they were, truly Hippopotamine; and moreover he identified them as being of the same species as those found so abundantly in caverns similarly situated along the north coast of Sicily. We were fortunate also in being just in time to find a small portion of the flooring of the cavern *in situ*, so as to indicate the original arrangement of the fossils. The Hippopotami-remains entirely occupied the lower stratum of stalagmitic red clay and earth, and were largely intermingled with rounded pebbles of the limestone rock; whilst above them was a bed, about one foot thick, of thinly stratified stalagmitic earth, in which were abundant remains of birds, and abundant teeth and bones of two species of Dormouse, one of which my friend Dr. Falconer named *Myoxus Melitensis*. From the disposition of these two distinct stalagmitic strata with such very distinct animal-remains in them, I was induced to consider that the relics from the cavern probably indicated two distinct periods of time and two distinct conditions of the island.

Two years subsequently to the discovery of this cavern at Crendi, another of more startling interest was accidentally discovered in the garden of Signor Buttegieg, situated in the ravine near the town or *casal* of Zebbug, in the centre of the island. It was discovered in sinking a large excavation to form a tank in the garden, the excavation accidentally dividing the narrow cavern into two parts; and being found filled with clay, it was cleared of this by the proprietor to

its floor, together with about fifteen feet more of the inner extension of the cavern; and the apertures were then closed to complete the tank. In removing the clay from this portion of the cavern into Signor Buttegieg's garden, a number of bones of more than one species of Elephant, particularly those of a remarkable pigmy species, were brought to the surface, where I found them lying when I visited the garden a few months afterwards, in company with my friend W. Medlycot, Esq.

By the permission of the proprietor, and the assistance of his son, Padre Pietro (whose names I am glad to be able to mention, for their kind consideration in a point of such important geological interest), I had the cavern reopened on both sides of the tank, and, under the superintendence of Padre Pietro, had it cleared out to its utmost recess, at about seventy-five feet beyond the part broken into by the tank, and also for about fifteen feet on the other side, to its original aperture leading from the side of the ravine, but at present situated beneath the roots of the fruit-trees in Signor Buttegieg's terraced garden.

The cavern ran horizontally from the ravine, having one short branch only, and varied in height from four and a half to five and a half feet, with a varying breadth of one and a half to two and a half feet. It was entirely filled with a yellow and grey sandy clay, and the floor was not stalagmitic. Several hundred loads of the filling were consequently removed to the surface and spread over the proprietor's garden, and proved to be a highly fertilizing surface-soil. Every fragment of bone brought with it was thus obtained; and it was at once strikingly evident to me that the fossil bones from this cavern differed characteristically from those of the Crendi cavern—the Hippopotami being apparently wanting, or rather occurring only exceptionally, instead of predominating as in

the Crendi cavern, and the bones and teeth of the Elephant, particularly the above-noticed remarkable pigmy species, had taken their place in the Zebbug cavern.

These interesting relics having been forwarded to my friend Dr. Hugh Falconer, he found that, besides the remains above mentioned, there were two species of *Myoxus*, or Dormouse, one being gigantic—also two species of extinct Swan, one of which was colossal—and also the bones and fragments of the shell of a Tortoise or Turtle,—all more or less bearing evidences of fierce gnawing by some Carnivora, whose remains, however, have not been found with them. The Pigmy Elephant and one *Myoxus* were named *Melitensis* by Dr. Falconer, after the island of Malta; the other *Myoxus* has not yet been named, although considered new; and he ascertained that both species were the same as those occurring in such abundance in the upper stratum of the Crendi cavern, of which several specimens had been previously sent to him through my friend T. R. Jones, Esq., then Secretary of the Geological Society. These fossils are all still undergoing the careful scrutiny they require before the publication of the complete description of them which they merit.

Again, in the spring of 1862 I was so fortunate as to find the vestiges of another bone-cave in Malta, near the village of Melliha, at the north end of the island, and about the same elevation as Crendi and Zebbug, viz. about 300 feet above the sea. The existence of fossil bones and teeth at Melliha, however, had been communicated to Lord Ducie and myself five or six years previously, by Mr. St. John, then Deputy-Inspector of Police, though our efforts at the time to find the locality did not result in success.

But having in the above year (1862) accidentally seen, in the collection of fossils of the island made by Signor Pace, of the Protestant College, a fragment of the tooth of a

Hippopotamus that he had himself found in a stone wall under the village of Melliha, I was induced to make further research in the neighbourhood for the before-noticed bone-cave, the recollection of which, however, it having excited no local interest at the time of its first discovery (more than twenty years previously), had almost died out in the locality. But its position was at length shown me—a few yards only to the north of the old church or chapel of Melliha, which is itself partly formed out of a cavern in the same cliff, and is venerated as one of the oldest chapels in the island, and from its proximity to the traditional spot of St. Paul's shipwreck. By digging down I found a fragment of the bone breccia *in situ* in front of the cavern and cliff, thus showing that the cavern had originally extended beyond the present line of the cliff.

The bone-débris, I was informed, was first discovered in breaking up the ground in front of the cavern to form a level terrace for a new field; and the breccia containing the bones and teeth was utilized by the proprietor in building the supporting walls, or was scattered over the adjacent terraces, whence, by diligent search, I procured nearly two bushel baskets of fragments of this breccia, with bones and teeth which seem to be exclusively of Hippopotami, no single fragment of the tusk or tooth of an Elephant being anywhere found with them to indicate its contemporary existence, thus seemingly associating the Melliha cavern more with the time and conditions of the Crendi cavern, or rather with the exclusively Hippopotami-remains in its lower stalagmite-stratum, than with those of the Zebbug cavern with its exclusively (or almost exclusively) Elephants' remains, and therefore also more probably linking the latter with the *Myoxus* and Bird bone-breccia forming the upper stratum of the Crendi cavern, which I have specially noticed. For it is remarkable that the lower part of the Crendi and the entire Melliha bone-cave breccia at present to

be found are apparently characterized by Hippopotami-bones and teeth only, and the Zebbug by the Elephant-teeth and bones; and the upper stalagmitic layer of the Crendi cavern containing also land-shells of existing species imbedded with the *Myoxus* and birds' bones seems to bring the latter and the associated Pigmy Elephant of the Zebbug cavern down to a period more recent than the Hippopotami; and a discovery made subsequently by Dr. Leith Adams, of the 22nd Regiment, seems also to confirm this view. In a letter dated the 8th of August last, which has been published in the 'Geological Magazine' for September 1864, he states that he has recently found the remains of the Pigmy Elephant, but generally very much worn, in a kind of drift deposit of red earth and subangular fragments of the rock, which is found scattered over certain portions of the island of Malta, and filling fissures and hollows into which it had been washed from the surrounding surface by a recent submergence of the island.

I can add also from my own observation, that the evidence of this recent submergence occurs generally; but I have not observed in it any Mammalian remains, the discovery of which is entirely due to the diligent researches of Dr. Adams. This drift deposit, and the nature of its origin, as having been evidently due to waves of translation following upon sudden subsidences, is nowhere better shown in the island than on the north side of the Bay of Melliha, where sandstones with fragments of littoral marine shells are interstratified with a bed of red earth four or five feet thick, with existing land-shells and subangular fragments of stones and sand, which is succeeded again by littoral marine sand and sandy earth and red earthy marls, with here and there a land shell also, and occasionally a fragment of sea-egg, spine, or marine shell, the latter showing the disturbing and rolling action they have undergone; and these strata are identical in character with those I have

mentioned as occurring along the whole of the low parts of the coast from Alexandria to Tripoli, and rising to a height of 100 feet and more, a section of one of which is given in page 377. And these subaqueous drift deposits are found *in situ* in Melliha Bay to a height of nearly 50 feet above the sea; but detached layers of the same subaqueous deposit of red earthy sand and clay may be seen nearly as high as the bone-cave of Melliha, which, as well as those of Zebbug and Crendi, is about 300 feet above the sea. Thus recent subsidences and cataclysms have evidently occurred, and seem to have affected almost the whole island; but, as there is left no purely marine subaqueous deposit of slow deposition containing even littoral marine shell-beds to prove a sufficiently long condition of subsidence and tranquillity for their return and existence, we have reason to infer that the re-elevation of the land soon slowly followed the cataclysms that swept the surface of its débris of earth, stones, and the bones of the animals then lying upon it, and which may probably have also led to the extinction of the Pigmy Elephant.

Another interesting point connected with this brief notice of this other highway of migration into Europe by the larger Elephant and Hippopotami is, that as none of the pigmy species have been found in Sicily with the former and the Hippopotami, it may have been localized, and perhaps indicates the insular condition of the place during its existence upon it, notwithstanding the abundance of the animal, and thus may be also one more instance of the influence of insular conditions upon the modification of species without affecting the type.

V.—BIRDS NOTICED IN THE ISLAND OF CRETE, DURING A STAY OF NEARLY TWO MONTHS

(From the 27th of April to the 18th of June),

By COLONEL H. M. DRUMMOND-HAY.

GRIFFON VULTURE (*Gyps fulvus*).

These birds are everywhere abundant throughout the island.

EGYPTIAN VULTURE (*Neophron percnopterus*).

Common on the mountains.

BEARDED VULTURE (*Gypaëtus barbatus*).

Two or three of these birds were seen on the higher ranges of the Sfakian Mountains.

OSPREY (*Pandion haliaëtus*).

Only one seen, in the salt-marshes at the head of Suda Bay, on the 29th April.

ELEONORA FALCON (*Falco Eleonoræ*).

This rare bird I first met with in the island of Crete: they were pretty numerous on the plain and in the salt-marshes at the head of Suda Bay, and in the vicinity of Khania. They were seldom noticed in the middle of the day, but towards evening might be seen in small flocks, in pursuit of a large species of beetle, which they dexterously strike and hold in the claw, devouring their prey on the wing: several specimens were shot, all in the full adult plumage. This bird probably breeds on the island, as they were seen as late as the 12th of

June. I have since met with this species in the island of Malta, where, however, it is exceedingly rare, and had not been previously noticed.

KESTREL (*Falco tinnunculus*).

Common; breeds on the island.

LESSER KESTREL (*Falco cenchris*).

Pretty numerous; breeds on the island.

ORANGE-LEGGED HOBBY (*Falco rufipes*).

Seen in large flocks as late as the 30th of May; a few probably remain to breed.

FORK-TAILED KITE (*Milvus regalis*).

A few seen on the Sfakian Mountains.

COMMON BUZZARD (*Buteo vulgaris*).

Frequently met with, and probably remains throughout the year.

MARSH HARRIER (*Circus rufus*).

Very common, the end of April and beginning of May, in the marshes.

LITTLE OWL (*Athene noctua*).

Very numerous; breeds on the island.

WOODCHAT SHRIKE (*Lanius rutilus*).

Very common; breeds. It is singular that this should be the only one of the tribe noticed on the island, and that *L. minor*, so common in other parts of Greece, was not seen.

SPOTTED FLYCATCHER (*Muscicapa grisola*).

Very common; breeds in the island.

WHITE-NECKED FLYCATCHER (*Muscicapa albicollis*).

Only one seen, 28th April.

BLACKBIRD (*Turdus merula*).

Very common on the mountains, where it breeds.

BLUE ROCK-THRUSH (*Petrocincla cyanea*).

Common; breeds on the mountains.

GOLDEN ORIOLE (*Oriolus galbula*).

Only two seen, the spring passage being nearly over.

ALPINE ACCENTOR (*Accentor alpinus*).

Pretty numerous on the snowy peaks of the Sfakian Mountains, where they breed.

WHEATEAR (*Saxicola œnanthe*).

Very common on the mountains, where they breed. These birds were much lighter in colour than British specimens; otherwise I could find no difference.

EARED WHEATEAR (*Saxicola aurita*).

Not quite so common as the above; found lower down the mountains, where they breed.

RUSSET WHEATEAR (*Saxicola stapazina*).

Rare; found in the same places as *S. aurita*.

WHIN CHAT (*Saxicola rubetra*).

A few seen, the latter part of April, after which they disappeared.

STONE CHAT (*Saxicola rubicola*).

Very numerous; breeds in the low grounds.

GREAT SEDGE WARBLER (*Salicaria turdoïdes*).

Only one seen, 1st of May.

SEDGE WARBLER (*Salicaria phragmitis*).

Common along the banks of the rivers.

LESSER OLIVE-TREE WARBLER (*Salicaria elaïca*), Linderm.

This bird, which in a former list I confounded with another species, I have now no doubt is the *S. elaïca* of Lindermayer.

It is very common in Crete, in the olive-groves only; I have also frequently met with it in Corfu.

NIGHTINGALE (*Philomela luscinia*).

Very common along the margins of the rivers.

BLACKCAP (*Curruca atricapilla*).

A few seen, 29th April; does not remain.

WHITETHROAT (*Curruca cinerea*).

A few seen, the end of April; does not remain.

BLACK-HEADED WARBLER (*Sylvia melanocephala*).

Very numerous; breeds, and is probably sedentary, as it is found in the Ionian Islands and other parts of Greece during the winter months.

WILLOW WARBLER (*Sylvia trochilus*).

A few seen about the end of April; does not remain.

GREATER TIT (*Parus major*).

Common, and is probably sedentary.

BLUE TIT (*Parus cæruleus*).

Not so common as the above, but probably remains throughout the year.

WHITE WAGTAIL (*Motacilla alba*).

One or two seen, the end of April.

GRAY-HEADED WAGTAIL (*Motacilla cinereocapilla*).

A few seen, the end of April.

BLACK-HEADED WAGTAIL (*Motacilla melanocephala*).

A few seen, the end of April.

TAWNY PIPIT (*Anthus campestris*).

These birds are common on dry rocky places, where they breed.

TREE PIPIT (*Anthus arboreus*).

A few seen, the latter part of April.

CRESTED LARK (*Alauda cristata*).

Very numerous in every part of the island, and probably remains throughout the year.

WOOD-LARK (*Alauda arborea*).

Found in considerable numbers on the mountains, where they breed.

BLACK-HEADED BUNTING (*Emberiza melanocephala*).

None seen before the 22nd of May, and then only a few. From observations since made, they seem to be confined to certain districts, where they breed.

COMMON BUNTING (*Emberiza miliaria*).

Very common; probably remain throughout the year.

ORTOLAN BUNTING (*Emberiza hortulana*).

Common on the mountains, where they breed. It may be remarked as singular that the Grey-headed Bunting (*E. cæsia*), which is common on the other islands during the breeding-season, should not have been noticed here.

CIRL BUNTING (*Emberiza cirlus*).

Not very common.

ITALIAN SPARROW (*Pyrgita italica*).

Common; sedentary.

GREENFINCH (*Chlorospiza chloris*).

Not uncommon.

BROWN LINNET (*Linota cannabina*).

This and the following species are common on the higher grounds, where they appeared to be nesting:—

REDPOLE (*Linota linaria*).

GOLDFINCH (*Carduelis elegans*).

Not uncommon.

CHAFFINCH (*Fringilla cœlebs*).

Very numerous; breed, and probably remain throughout the year. I may remark that the Chaffinch is not found in Corfu during the summer months (nor have I met with it in other parts of Greece at that season), but is of regular passage, arriving in considerable numbers about the first week of October, and not taking its departure till the end of February or beginning of March. Lindermayer mentions that a few are found in the summer months, and then only in the more northern parts of Greece, on the mountains, where it breeds, the greater part going further north; it is surprising, therefore, that these birds are to be found so late in the season, and breeding, on the island of Crete. Not having specimens for comparison, it will be for other ornithologists visiting the island to decide whether this southern bird may not be the allied African species, *F. spodiogenia*.

CHOUGH (*Fregilus graculus*).

Very numerous on the tops of Mount Ida, where they breed.

RAVEN (*Corvus corax*).

Common; sedentary.

HOODED CROW (*Corvus cornix*).

Very numerous; probably remain throughout the year.

JACKDAW (*Corvus monedula*).

Common on the lower ranges of the mountains, where they breed.

JAY (*Garrulus glandarius*).

A few seen on the Sfakian Mountains, where they breed. The Hooded Jay (*G. melanocephalus*), said to frequent the

southern and eastern parts of Greece, was not noticed, nor do I believe it ever to be found, on the island.

WREN (*Troglodytes europæus*).

Seen on the mountains only, where they were pretty generally dispersed.

HOOPOE (*Upupa epops*).

A few seen the end of April and beginning of May.

ROLLER (*Coracias garrula*).

Only one seen, 15th of May.

BEE-EATER (*Merops apiaster*).

Very common; most likely breed on the island, as they were seen as late as the 17th of June.

SWALLOW (*Hirundo rustica*).

Common; remains during the summer months.

MARTIN (*Hirundo urbica*).

Not so numerous as the above; breed on the mountains.

SAND-MARTIN (*Hirundo riparia*).

Several seen during the early part of May; none afterwards.

ROCK-MARTIN (*Hirundo rupestris*).

Seen only on the mountains, where it was breeding in considerable numbers on the perpendicular faces of the rocks. It is probably sedentary, descending to the lower grounds in winter, as I have found it very numerous at that season, skimming over the marshes, both in the Ionian Islands and other parts of Greece.

SWIFT (*Cypselus apus*).

This and the following species both breed on the island, and are common:—

WHITE-BELLIED SWIFT (*Cypselus alpinus*).

NIGHT-JAR (*Caprimulgus europæus*).

A few seen about the beginning of May.

WOOD-PIGEON (*Columba palumbus*).

Found breeding on Mount Ida (Mount Psilorites), where they were pretty numerous.

BLUE ROCK-PIGEON (*Columba livia*).

Very common; breeds both in the caves on the sea-shore and on the highest mountains, where they were found in great numbers.

TURTLEDOVE (*Columba turtur*).

Very numerous during the passage in April and May; a few only remain to breed.

GREEK PARTRIDGE (*Perdix græca*).

Very common on the higher grounds: a covey, recently hatched, was found as early as the 29th of May. *Perdix petrosa*, so common on the Barbary coast, was not met with, nor do I think it likely that it is ever found on the island.

PRATINCOLE (*Glareola torquata*).

Only two were seen, one as late as the 12th of June.

GREAT PLOVER (*Œdicnemus crepitans*).

Common; breeds on the island, but not far inland.

LITTLE RINGED PLOVER (*Charadrius minor*).

Seen in large numbers on my first arrival; none after the 15th of May.

COMMON HERON (*Ardea cinerea*).

Common on the island, and probably remain; as they were seen to a late period.

PURPLE HERON (*Ardea purpurea*).

Very common on my first arrival; none seen after the middle of May.

LITTLE EGRET (*Ardea garzetta*).

Not uncommon in spring; one was seen as late as the 10th of June, in company with a Spoonbill.

SQUACCO HERON (*Ardea comata*).

Very common during the spring; none seen after the middle of May. This applies to the following species:—

LITTLE BITTERN (*Botaurus minutus*).

NIGHT HERON (*Nycticorax gardeni*).

Only two or three seen, in the beginning of May.

WHITE SPOONBILL (*Platalea leucorodia*).

Only one seen, which was shot on the 10th of June, and proved to be a female. As I am not aware of this bird breeding in Greece, it is somewhat remarkable that it should be found at this season in Crete.

GLOSSY IBIS (*Ibis falcinellus*).

Two or three of both this species and the following were seen in the marshes, the latter part of April:—

CURLEW (*Numenius arquatus*).

COMMON REDSHANK (*Totanus calidris*).

This, along with the four following species, were frequently met with in the marshes during the end of April and beginning of May, and by the 15th had disappeared:—

GREEN SANDPIPER (*Totanus ochropus*).

COMMON SANDPIPER (*Totanus hypoleucos*).

GREENSHANK (*Totanus glottis*).

RUFF (*Machetes pugnax*).

GREAT SNIPE (*Scolopax major*).

Pretty numerous during the latter part of April. Six couple of these birds were shot in one day.

COMMON SNIPE (*Scolopax gallinago*).

Plentiful during the latter part of April and beginning of May. None seen after the middle of the month.

LITTLE STINT (*Tringa minuta*).

Very common; none seen after the 15th of May.

SPOTTED CRAKE (*Crex porzana*).

Common; breeds on the island.

LITTLE CRAKE (*Crex pusilla*).

Not uncommon; disappear about the beginning of May.

WATER-HEN (*Gallinula chloropus*).

Only one or two seen.

GARGANEY TEAL (*Anus querquedula*).

A few seen in pairs as late as the middle of June, and most probably breeds on the island.

FERRUGINOUS DUCK (*Fuligula nyroca*).

A few seen in pairs in May.

COMMON TERN (*Sterna hirundo*).

One seen, 18th June.

WHITE-WINGED BLACK TERN (*Sterna leucoptera*).

Common; probably breeds on the island; their nests, however, were not found.

HERRING-GULL (*Larus argentatus*).

Very common; breeds.

BLACK-HEADED GULL (*Larus melanocephalus*).

One seen, 28th April.

GREATER SHEARWATER (*Puffinus cinereus*).

A few seen on the coast, the middle of June.

DUSKY SHEARWATER (*Puffinus obscurus*).

Not uncommon, and probably to be found at all seasons along the coast.

CORMORANT (*Phalacrocorax carbo*).

Common, and probably remains throughout the year.

CRESTED PELICAN (*Pelecanus crispus*).

One seen in the beginning of May; is probably common in winter.

STORM-PETREL (*Thalassidroma pelagica*).

Several were seen off the island on the 19th of June.

V.—ON THE LAND SHELLS OF CRETE.

By CAPTAIN SPRATT, R.N., C.B., F.R.S., &c.

One of the strongest arguments against the tradition or idea of a former connexion between Crete and Cyrene is to be found in the marked difference between the land shells living upon the two opposite sides of the Mediterranean, those of Crete being closely connected with the species and forms common to Greece and south-eastern Europe.

Nevertheless Crete possesses a rather remarkably large number of new species that have not yet been found in Greece; for there are no less than eighteen new *Clausiliæ*, and two *Helices*, which have been named and described in the Zoological Society's 'Proceedings,' by Dr. Pfeiffer, of Cassel, to whom they were submitted through Mr. Cuming, from the collection I had made in my several ramblings over the limestone districts of the island—the usual habitat of the former.

But, from the prevalence of calcareous strata in the tertiary formations, as well as in the older Hippurite and Nummulitic series of rocks, the island seems more than usually prolific in land shells; and some parts abound with the larger forms common to Greece—*Helix, Vermicularius*, &c., which have in consequence become an article of commerce, several hundreds of baskets of snails being annually exported to Constantinople, Alexandria, and other large towns, for the Greeks of the Levant during their fast at Lent. For on certain days the members of the Greek church are privileged to eat these dainties, when

meat and, I believe, even fish are prohibited—mollusks being considered to belong to neither, whether they live on land or in the sea; and savoury stews of them are then in great request, and no doubt much relished by those in whom a long fast has perhaps blunted their usually more refined delicacy of taste. To be considered eatable, however, even then, it is necessary that they should have been kept unfed for two or three months, so as to have become somewhat cleansed and purified by the absorption of the slimy matter.

But the little *Clausiliæ*, being too small to be worth collecting for a meal, although sometimes exceedingly numerous, have escaped being objects of local interest. Nevertheless they form an interesting group to the naturalist, from their number, variety, and peculiarity of sculpture, as well as from the variation of their habitat, some species being peculiar to the maritime hills, others belonging to the middle heights, whilst those which are new seem to be confined to the vicinity of the winter snow-line upon Mount Ida and the White Mountains, having their habitat at the heights between 5000 and 6500 feet above the sea.

The *Clausiliæ* were special favourites with my lamented companion Forbes, he having found them so plentiful as to constitute the characteristic species of land shell of the Greek islands and Greece; for they attain their maximum European development in the latter continent and along the Dalmatian chain in connexion with it. The abundance of species of *Clausiliæ* also found in Crete, therefore (there being ten or twelve more than the new species given below), indicates that its land-fauna and that of south-eastern Europe are closely connected, constituting it an outlier of the above-mentioned continent and chain, and thus agreeing with the other physical phenomena of mountain heights and submarine deeps, which seem to link it in the past with Europe,

and not with Africa. And this was confirmed by my researches along the African coast, especially at Cyrene, opposite to Crete; for the *Clausiliæ* seemed to be almost wanting, and the several species of land shells, chiefly *Helices*, common to Cyrene and Crete differ so markedly from the forms common to Crete and Greece, that their distinctness is obvious to the most superficial conchologist and collector.

LIST OF NEW SHELLS FROM CRETE.

Helix Sudensis	Suda Bay.
—— zonella	White Mountains, 6500 feet.
Clausilia eburnea	„ „ „
—— glabella	„ „ 5000 feet.
—— discolor	„ „ „
—— Idæa	Mount Ida, 5500 feet.
—— tenebra	Fair Havens.
—— præclara . . .	Mirabella.
—— tenuicostata . .	„
—— distans	Sudsuro.
—— Milleri	Kouphonisi.
—— rudis	Zakro.
—— strigata	Sitia.
—— extensa	„
—— striata	Candia.
—— candida . . .	„
—— homalorrhaphe .	„
—— Spratti	„
—— turrita	„
—— solidula . . .	„

VII.—ON THE GREEK INSCRIPTIONS FOUND IN CRETE.

By CHURCHILL BABINGTON, B.D., F.L.S.,
FELLOW OF ST. JOHN'S COLLEGE, CAMBRIDGE*.

The following inscriptions were collected in various parts of Crete by Captain Spratt. Some are from Eremopoli, others from Hierapytna, others from Polyrrhenia, Lyttus, Eleutherna, Cnossus, Elyros, Lappa, Axos, and other places. The whole number of them is forty-one. Four or five have been published in Böckh's 'Corpus Inscriptionum'; the rest are, I believe, inedited†. Some are so fragmentary as to yield up no intelligible sense, while others seem to have been so worn or damaged that the characters are but imperfectly or incorrectly represented in the transcript. Among these are three *boustrophedon* inscriptions, which, I very much regret to say, have baffled my often-repeated efforts to decipher them. Mr. Birch of the British Museum, who kindly examined them, has not been more successful.

Of those which are already edited, by far the most important is that copied by Pashley (i. 290), and published after him, with conjectural restorations (where the stone was injured or broken), by Böckh (Corp. Inscr. ii. p. 1102, in the Appendix). It relates to a dispute respecting the territories of two Cretan cities, Hierapytna and Itanus, and contains quotations from treaties in the Cretan (*i. e.* Doric) dialect. It is later than Ptolemy Philometor, whose death (B.C. 146) it mentions, and

* The prefatory remarks originally formed a paper read before the Royal Society of Literature in April 1863.

† A very few, containing only a small number of letters without sense or connexion, are omitted altogether in this paper as well as in the plates.

belongs to the time of Quintus Fabius Licinus the proconsul, who appears to have lived in the first century before the Christian era. Upon this inscription, of 85 lengthy lines, I had bestowed some days' labour before I perceived that it had been published by Böckh; but this labour was by no means lost, as I arrived at an independent judgment from a different transcript, and, on comparing my work with his, found that we had each made errors which might be corrected by the other. Mr. Pashley has only printed such parts of the inscription as he could make into words. Captain Spratt, on the contrary, has copied a letter, or even a stroke, wherever he could see one. Consequently it is quite certain, from the *ductus litterarum*, that many of Böckh's conjectural restorations are false, while others, again, are fully confirmed by the traces of the letters which Pashley had omitted. This important but very difficult inscription may be much amended by help of Captain Spratt's transcript. Thus, for example, the absurd reading, *τὸν ἄξιον τῆς νυκτὸς*, where neither Pashley nor Böckh seem to have suspected a blunder, must be changed for Captain Spratt's transcript, *τὸ πλεῖον τῆς νυκτός*. By means of it we also get a new word for the lexicons—*περιαμπὰξ, all around*, formed like *διαμπάξ*. I will also state my belief that a word which is inserted in the lexicons on the authority of this very inscription, and this only, should be expelled with a pitchfork, viz. *διαμπέτιξ*, though occurring both in Pashley and Spratt, for which I think that we should read *διαμπέριξ*, which is equally new, but naturally compounded. The stone is probably a little mutilated; or the graver may have made a mistake. Among the rest is one in Latin (the only Latin inscription in the collection), containing the name of the Emperor Hadrian and no more; the more important* of the rest, which, with one exception, are in Greek

* These remarks do not apply to the inscriptions in the Fitzwilliam Museum which I had already published.

prose, are as follows:—The city of Polyrrhenia erects an inscription (and probably a statue also) to the Emperor Vitellius, whom it terms Saviour and Benefactor. One from Hierapytna, very much mutilated, relates to the sale of corn, and contains the new word ἀλφιτισμός. The city of Lyttus erects an inscription in honour of the Emperor Hadrian in his third consulate, &c., *i. e.* A.D. 125, during the office of Apollonides their protocosmus, a species of magistrate known to us only by Cretan inscriptions. In this very year, Eckhel tells us from coins, "perlustratis Archipelagi insulis Athenas revertitur." Thus the coins and inscriptions help each other. This may possibly be the same as one of Böckh's inscriptions; but if so, Spratt's is the better copy. A precisely similar inscription, also, from Lyttus, in honour of the Empress Matidia, daughter of Marciana, who was sister of Trajan. We have also from Lyttus an inscription for a pedestal of a statue of L. Aurelius Verus, the colleague of M. Aurelius in the Empire. He was (as the inscription indicates) the adopted son of Antoninus Pius, who was himself adopted by the Emperor Hadrian. The protocosmus under whose direction the statue was erected was Pantandrides, son of Pantandrides. A vexatiously fragmentary inscription from Eleutherna mentions the name of "King Ptolemy Euergetes," and contains no more. Whether Ptolemy III. or VII., who both bore the title of Euergetes, is meant, is hard to say. The remaining inscriptions are partly records of decrees of certain cities (Lappa, and Elyrus) constituting certain persons their proxeni or foreign consuls. Most of the remainder are sepulchral inscriptions, one of which is interesting as containing the Cretan proper name Idomeneus; others are curious as recording strangely formed names, as Saubathis. We have also a few votive tablets—one to Demeter and Kore, another to Hephæstus, another to Hygieia.

There is also a sepulchral inscription in elegiac verse, not without beauty, though somewhat obscure. The first line is a little mutilated, and I cannot restore it; it contained, doubtless, the name of the lady who is the subject of panegyric. She leaves behind a husband Peisos (or rather, as I suspect that we should read, Pison), who, as well as her parents and her brother Pheidon, is honourably mentioned in the epitaph. It concludes with a prayer that Jove may preserve the boy Sonautes, whom she leaves behind her, with an unspotted character for honour and integrity.

CHURCHILL BABINGTON.

No. 1.—Plate 1.

Κόρινθος
[τ]ῷ Ἡφαίστῳ
εὐχὴν, δη-
μόσιος. (Cnossus.)

The readings are rather uncertain; and the original seems to be barbarous. If rightly restored, it will imply that Corinthus, a public notary, discharged a vow to Vulcan.

No. 2.—Plate I.

Κέρδων καὶ Εἰρή-
να Ἀγαθημερί-
δι τῇ ἰδίᾳ θυγα-
τρὶ μνήμης χάριν. (Smari.)

The objects represented below are probably a comb, and a net for the hair, and some globular object (perhaps a scent-bottle) in a saucer.

A memorial tablet to Agathemeris, erected by her parents, Cerdon and Irene.

No. 3.—Plate I.

[θ]εοῦ Νέρουα υἱωνὸ . .
χρημάτων, ἐπὶ ἀνθ . . .

Refers to the Emperor Hadrian, who is called in another inscription (B. no. 2579) θεοῦ Νέρουα υἱωνός.

(Plain of Pediada.)

No. 4.—Plate I.

An unintelligible fragment, perhaps referring to Athens.

(Eremopoli.)

No. 5.—Plate I.

[A]ὐρήλιον Βῆρον Καίσαρα
Τ. Αἰλίου Ἀδριανοῦ Ἀντωνεί-
νου αὐτοκράτορος Σεβασ-
τοῦ εὐσεβοῦς υἱὸν, θεοῦ Ἀ-
δριανοῦ υἱωνὸν Λυττίων
ἡ πόλις, διὰ πρωτοκόσμου
Παντανδρίδα Παντανδρίδα. (Lyttus.)

There is no verb to πόλις, but the inscription is complete. (No. 6 similarly has no verb.) It may have been an altar as easily as a pedestal for a statue of L. Aurelius Verus, the colleague of M. Aurelius in the Empire. He was the adopted son of the Emperor T. Ælius Hadrianus Antoninus, commonly called Antoninus Pius, who was himself adopted by the Emperor Hadrian. The city of Lyttus erects a statue (?) to L. Aur. Verus by the agency of Pantandrides, son of Pantandrides, its chief magistrate. In line 4, υἱὸν is for υἱὸν, a barbarism which occurs in other monuments.

No. 6.—Plate I.

Λυττίων πόλις
Πουπλίαν
Αἰλίαν Παρ-
θενίν τὴν
σώφρον[α]. (Lyttus.)

A monument erected by the Lyttians to Publia Ælia Parthenis, of sober life.

No. 7.—Plate I.

Ματιδίαν Σεβαστὴν,
θεᾶς Μαρκιανῆς θυ-
γατέρα, ἀδελφῆς αὐ-
τοκράτορος Νέρουα
Τραιανοῦ Καίσαρος
Σεβαστοῦ, Γερμα-
νικοῦ, Δακικοῦ, Λυτ-
τίων πόλις διὰ
πρωτοκόσμου
Τι. Κλαυδίου Βοινο-
βίου. (Lyttus.)

A precisely similar inscription to No. 5, recording that the city of Lyttus erects a statue (?) by means of its chief magistrate Titus Claudius Bœnobius (perhaps an error for Cœnobius, or rather a provincialism, compare *tabeo, τήκω*) to the Empress Matidia, daughter of Marciana, who was the sister of Trajan.

No. 8.—Plate I.

It is impossible to make out this without a more perfect copy. It would seem to be a monument to Pardallus, the

chief magistrate (πρωτόκοσμος) of the Lyttians, erected by his friend Marcus Junius Soterius.

(Lyttus.)

No. 9.—Plate I.

Very similar to Böckh, no. 2579, and possibly the same. If so, Captain Spratt's transcript is the better of the two.

Αὐτοκράτορα Καί-
σαρα, θεοῦ Τραιανοῦ
Παρθικοῦ υἱὸν, θεοῦ
Νέρουα υἱωνὸν, Τραια-
νὸν Ἁδριανὸν Σεβα-
στὸν, ἀρχιερῆ μέγι-
στον, δημαρχικῆς
ἐξουσίας τὸ θ', ὕπ[α]τ[ον]
τὸ γ', Λυττίων ἡ πό-
λις διὰ πρωτοκόσ-
μου Ἀπολλωνίδου
Κλευμενίδου. (Lyttus.)

A statue (?) erected to the Emperor Hadrian in the 9th year of his reign (A.D. 125) by the Lyttians during the office of Apollonides, son of Cleumenides. In this very year (when he was 'Tr. P. VIII., IX., Cos. III., P.M., Imp. II.') "perlustratis Archipelagi insulis Athenas revertitur" (Eckhel. vi. 480), which remark is illustrated by this inscription.

No. 10.—Plate I.

Τίτος Φλά-
βιος Ἀπολ-
λωνίδη(ς)
καὶ Κλήσιπ-

ΠΟΣ . . .
. . . . . .
. . . ΠΑΤΡΙ
ΜΝΗΜΗΣ ΧΑΡΙΝ. (Lyttus.)

A barbarously written epitaph, only in part legible, on a stele (?) erected by Apollonides and Clesippus to their father. The unintelligible part of the inscription doubtless contained his name.

No. 11.—Plate I.

This is very ancient, and written *boustrophedon*, but I fear we have only a fragment containing words imperfect at both ends. It is just possible that the inscription relates to the transport of corn; but this is extremely uncertain *.

(Built in the arch of a house at Lyttus.)

No. 12.—Plate I.

A very early fragment, written *boustrophedon*, but unintelligible. (Lyttus.)

No. 13.—Plate I.

Αἴλιος
Ἀχιλλεύς.

A sepulchral monument apparently to Ælius Achilles, and containing only his name. (Lyttus.)

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* In line 5 the letters ΕΚΣΟΝ may be the word ἐξόν: in line 9 δέκα is doubtless to be discerned: in line 11 the letters ΑΜΕΝΟΣΙΤΟΝΟ seem to contain some case of σῖτος, which reappears in the last line. The S can hardly be any letter but iota; if so, we have ΤΟΙΣΙΝ in line 4. Yet it is strange that the common form of the letter should also occur.

No. 14.—Plate I.

An unintelligible fragment. We perhaps have here the proper name Ælia (Αἰλία). (Lyttus.)

No. 15.—Plate I.

ρως Σωτηρίου.

The only word legible may be either a proper name or an adjective. (Lyttus.)

No. 16.—Plate I.

The word ἐκηβόλος appears to be contained in this fragment; and if so, it is probably in verse; ἰσοφάριζεν may have been the word preceding it.

No. 17.—Plate I.

A sepulchral slab, with a pediment ornamented at its angular points, greatly resembling the column figured on the right-hand side in Smith's *Dict. Gr. and Rom. Antiq.* p. 437, b, s. v. *Funus* (first edit.). The slab is broken off abruptly, but in such a manner as to show that it probably contained only two lines in its upper part: breadth about 15 inches. The letters are narrow, three-quarters of an inch long, deeply cut, rudely formed, and coloured with vermilion. The forms of the A and Σ resemble those of the capitals now in use.

Ἡράκλειτος Μεν . . . . . υ
Κασσαν[δρ] . . . . (Eremopoli.)

The graver has written HPAKΛETOΣ instead of HPAKΛEITOΣ. In the first line we have perhaps the frag-

ments of ΜΕΝΕΛΑΟΥ; but only the first two letters are certain.

Now in the Fitzwilliam Museum, Cambridge.

No. 18.—Plate I.

An epitaph on Demaratus, son of Ammonius, a famed hunter. The inscription is mutilated, being now about 17 inches broad, and 9 high. The letters are broad and neatly formed, less than an inch long: the cross stroke of the A is bent downwards; in other respects the letters resemble the modern character. This inscription, which seems to be tolerably ancient, cannot now be read without the greatest difficulty, as most of the letters are very shallow and considerably defaced.

Τὸν θρασὺν ἐν θή[ρ]αις Δαμάρατον, [ξένε, λεύσσεις,]
λαμπρὰ κυναγεσίας ἔργα πογη[σάμενον,]
ὃν γενέτας ἔσπειρ' Ἀμμώνιος ἐσ[λὸν ἐν ὅπλοις]
[κ]αὶ βουλᾷ, πίστει δ' ἔξοχον ἀμερ[ίων,]
[εἰκο]σέτη δ' ἔκλαυσαν ὁμήλικες ὄν[τα κυναγόν,]
[μνήμην δ'] εὐσεβέων πατρὶς [ἔσωσεν ἀεί.]

(Eremopoli.)

For the better restoration of this inscription I am indebted to the Rev. Prof. Selwyn.

We have to remark ΠΙΣΤΙ written for ΠΙΣΤΕΙ, and, as it seems, ΒΟΥΛΑ for ΒΟΥΛΑΙ: but the stone is so defaced that the reading of the last word is a little uncertain. The second E of εἰκοσέτη is likewise so injured that the reading is extremely doubtful.

Now in the Fitzwilliam Museum, Cambridge.

No. 19.—Plate I.

Epitaph of a lady. (See the introductory remarks.)

Τὰν μεγάλαυχον . . . .
ἃς κλέος ἐν Κρήτᾳ μίμνεται ἀθάνατον·
δόξῃ γὰρ γονέων, ἀρετᾷ δ' ἀνδρὸς συνομαίμου
Φείδωνος, γενεᾶς ἔκκριτον ἀθανάτων
μναστῆρα σὺ δέδεξαι ἐπίφθονον· [ἀλλ'] ἐτέκνωσας
σᾶς ἀλόχου, Πείσως, ἐγγονον ἰσόθεον·
ἀλλὰ, Ζεῦ Κρονίδα, σώζοις γόνον ὃν κατέλειπ[εν]
Σωναύταν δεκέτη δόξαν ἔχοντ' ἀρετᾶς.

(Eremopoli.)

For Πείσως we should probably read Πείσων.

The first line is not much mutilated, but has baffled my endeavours to restore it.

No. 20.—Plate I.

A broken piece of stone of considerable size, but mutilated, smooth and convex above, formed below like the keel of a ship, of one extremity of which it is perhaps a representation: the inscription is written from right to left, upon one side. The figure is about one-fourth of the size of the original. Two or three letters seem to be missing at the commencement: the inscription is certainly entire at the other end.

The letters appear to be

ΜΟΝΕΓΡΑΦΕΜΕ.

(Eremopoli.)

The characters of this inscription show that it belongs to a very early period of Greek palæography. See Rose's *Greek Inscriptions, Proleg.* p. xv. sqq., and the plates.

I conjecture that we should read

[Τί]μων ἔγραφέ με.

The name of the artist who drew the dolphin is of course uncertain.

Now in the Fitzwilliam Museum, Cambridge. The descriptions of this and the other inscriptions of Captain Spratt deposited in the Cambridge Museum are reprinted, with slight alterations, from my paper in the 'Cambridge Journal of Classical and Sacred Philology,' vol. ii. p. 98 (1855).

No. 21.—Plate I.

Ἀρκὰς . . . .
ἐς ὁποτέρους . . . .
. . . . ἀλφιτι-
σμὸς κατ' ἐνιαυτὸν ἀπ-
ὸ γᾶς ἢ ἀπὸ θαλάσσας (?)
* * * *
ἐξ Ἱεραπύτνας
* * * *
. . . Ἱεραπύ-
τνας ἀτελέας ἰέναι ἐπ' Ἀρ-
κάδας, ἢ ὁ Ἀρκὰς . . . (Hierapytna.)

Contains the name of the city Hierapytna twice, but little else that can be read with certainty. One may suspect that it was a fragment of a treaty relating to the corn trade between the Cretan Arcadians and the Hierapytnians. The word ἀλφιτισμὸς is not found elsewhere.

No. 1.—Plate II.

A pedestal of massive marble about 4 feet by 1½, upon which images have been fixed, the holes for the soldering yet remaining. The letters of this inscription, deeply and dis-

tinctly graven, are of the Roman period; they are fully an inch long.

Δοιούς σοι Διόδωρος ἐθήκατο, Σῶτερ, ὀνείρους
ἀντὶ διπλῶν ὄσσων φωτὸς ἐπαυράμενος.

(Lebena.)

Müller (*Ancient Art and its Remains*, p. 526, Leitch's Transl. 2nd edit.) mentions a winged figure of an ὄνειρος on a vase. Cf. Eurip. *Hecub.* v. 71. If the images were of this kind, they may indicate that Diodorus dedicates them to Asclepius (who is often styled *Saviour* on coins and by authors), having recovered his sight in consequence of a revelation made to him in a dream. Compare M. Aurel. lib. i. c. 17, and Gataker's note. It has, however, occurred to me that the ὄνειροι may possibly be images of the diseased eyes themselves. They unfortunately do not now exist, and so cannot settle the question which Professor Conze has this year (*Archäologischer Anzeiger* for 1864, No. 182) asked, but not answered, in his notice of the Greek antiquities which are contained in the Fitzwilliam Museum. But I think the first interpretation is the true one.

Now in the Fitzwilliam Museum, Cambridge.

No. 2.—Plate II.

Οὔλπιοι Νείκα[ν]-
δρος καὶ Σωτη[ρι]-
κὸς Ὑγείᾳ σω[τείρᾳ καὶ]
[Κό]ρῃ συνοδοί[ποροι]
[ἐδ]ώκατον αἴσ[ια]. (Lebena.)

A votive offering to Hygieia and Core by Ulpius Nicander and Sotericus. The restorations are somewhat uncertain. If Οὔλπιοι be rightly copied, the word will agree with the two names following. Ὑγείᾳ is for Ὑγιείᾳ, as often in late Greek.

On a fragment of a pedestal, lying in a ravine at Lebena, and below the site of its temple.

No. 3.—Plate II.

[ὁ δεῖνα τοῦ δεῖνος]
Πτολεμαιεὺς Γορ-
τυνίων πρόξενος
καὶ πολίτας αὐτὸς
καὶ ἔκγονοι.

(Gortyna.)

The first line might be expected to contain the name of the citizen of Ptolemais, and his father's name; but the letters do not read very easily into anything. Ἐπαφρᾶς Ἀριστοκράτους is almost too bold. Böckh (no. 2560) has the very similar inscription, Φιλόξενος Ἀλέξιδος Κυρηναῖος Γορτυνίων πρόξενος καὶ πολίτας αὐτὸς καὶ ἔκγονοι. The comparison leads us to suspect that the Ptolemais of our inscription is the city founded on the port of Barca in the Cyrenaica.

No. 4.—Plate II.

(Böckh, no. 2568; Captain Spratt's text is better.)

Θεαῖς Δημητρὶ καὶ Κόρῃ
Λαρκία Ἄρτεμις
ἐκ τῶν ἰδίων. (Agia Thoma.)

Lartia or Larcia (not Marcia, as Böckh reads the word) Artemis erects this tablet to the Goddesses Demeter and Core. Above is written ΚΥΔΙΑ, probably gen. of Cydias.

No. 5.—Plate II.

A very ancient inscription written *boustrophedon*, but difficult to make out without a better copy. Captain Spratt says

that it is "on a slab of black marble at the spring of Axos, and much worn and very difficult to be deciphered in consequence, and only legible in parts when kept wet. My copy is therefore probably very defective, but was taken with great care and pains." Mr. Birch, as well as myself, is unable to make anything of it.

No. 6.—Plate II.

Βασιλέα Πτολεμαῖο[ν
Εὐεργέ[την].

(Eleutherna.)

Ptolemy III. and Ptolemy VII. both bore the title of Euergetes: it is very unlucky that this inscription preserves no more than the name: it shows, however, a connexion between Eleutherna and Egypt during the Macedonian period.

No. 7.—Plate II.

Contains [ελ]ευθερναι . . .

a portion of the adjective derived from the city.

(Eleutherna.)

No. 8.—Plate II.

Ἔδοξε Λαππ[αίων τᾷ πόλει]
Σωτάδαν Παν . . .
[ἔμ]εν πρόξενον
αὐτὸν [κ]αὶ γ[ένος]
[Ἔ]δο[ξε] Λαππαίων τᾷ [πόλει]
. . . αἶον πρόξενον
[ἔμε]ν [κ]αὶ γένος. (Lappa.)

A portion of a decree of the Lappæans constituting Sotades and others their proxeni: *πόλει* is probably the right word to supply (see B. no. 2584). Similar inscriptions to this have been found at various places in Crete (B. no. 2558–2560).

No. 9.—Plate II.

Ἔδοξε Λαππαί[ων τᾷ πόλει
Απολ]λώνιον Κοιράνου [υἱὸν
πρόξε]νον ἔμεν αὐτὸν κ[αὶ τὸ γένος].
Ἔδοξε Λαππαί[ων τᾷ πόλει]
Φιλόσταρτον Νε[ρά]
τιον πρόξενον [ἔμεν]
. . . . . :
καὶ τὸ γένος. (Lappa.)

The change of Philostratus into Philostartus deserves notice.

No. 10.—Plate II.

A fragment containing apparently the word *σῶτερ* or *σωτῆρα*. (Lappa.)

No. 11.—Plate II.

Ἔδοξε τ[ᾷ πό]λει τῶν Ἐλυρ[ίων]
. . . προξένῳ καὶ Θεαροδόκῳ
. . . καὶ ἀδελφοῖς Κλεοφανεῖ . . .
Ἔδοξε [τᾷ πόλει τῶν Ἐλυ]ρίων . . .
. . . . . .
[πρ]υτανείᾳ αὐτὸν καὶ ἐγγόνους. (Elyros.)

No. 12.—Plate II.

Ἀγαθᾷ [τύχᾳ· ἔδοξε τᾷ βουλᾷ]
καὶ τῷ δάμῳ· Κλησθένης Σω-
σ[ί]ω εἶπε· Ἀντίοχον καὶ Ἀγαθοκλῆν
Σωσιγενέος Ἱεροπολίτας
προξένος ἦμεν αὐτὸς, καὶ
ἰσοπολιτείαν καὶ γᾶς καὶ
[οἰκίας ἔνκτησιν].

(Agia Irene, Selino.)

This is a duplicate of an inscription printed in Böckh, no. 2558, where four more lines are given at the end.

The only uncertain word is Σωσίω. Spratt's copy has ΣΟΣΩ; Pocock gives ΣΟΣ·Ω; Böckh edits Σωσίνω, which is too long. It appears that either this copy of the inscription or else Captain Spratt has omitted a line which occurs after *αὐτὸς καὶ* in the other copy. The omitted words are:

ἔκγονα, ὑπάρχεν (sic) *δὲ αὐτοῖς καί.*

No. 13.—Plate II.

This fragment from Rhokka, written in very late Greek characters, was wholly unintelligible to me. Mr. Birch, however, has been somewhat more successful. He writes:—

"No. 13 seems to me probably a Christian inscription in bad Greek, which many of them are.

ἰσ . . δυσις τις (τῆς) δουλις (δούλης) του
θῦ (Θεοῦ) Ανεσιος μωναχις (μοναχῆς)

As to the rest, I can make nothing out of it."

If these ingenious speculations be right, as they probably are, this will be an inscription relating to a nun named Anesis. I half suspect that the first word is εἰσόδενσις, *a money-contribution* or *collection*. (εἰσοδιάζω, *to collect money*, is a word of the LXX. and of late authors.)

No. 14.—Plate II.

ν καὶ κ
[Βι]τέλλ[ι]ον αὐτοκράτορα
[κ]αὶ ἑαυτῆς σωτῆρα
καὶ εὐεργέτην ἁ πόλις. (Polyrrhenia.)

In line 2 the I may as well be a T, and an I must be supplied after the second Λ. No Emperor's name ends in -ellus. In line 3, N is probably AI, and a K has been obliterated. ΣOTHPA may be miscopied for ΣΩTHPA, or may be the graver's own error; in any case the correction is certain. This is an inscription erected in honour of the Emperor Vitellius for some services rendered to the city of Polyrrhenia, who calls him Saviour and Benefactor.

No. 15.—Plate II.

Πεισαγόρας Ἰδομενεὺς
Σύμη Ἀσκαίνιος. (Polyrrhenia.)

This inscription appears merely to record four proper names, the third being a woman. Idomeneus is a well-known Cretan proper name. It may be suspected that Ascanius (Ἀσκάνιος) is the true reading of the fourth name.

No. 16.—Plate II.

Φουλβία Δρά-
κωνος ἐπε-
σκεύασεν
τὸν ναὸν ἐκ
τῶν ἰδίων
τοῦ κυρίου
Σαράπιδος. (Pœkilassus.)

A rough stone fragment, perhaps a piece of a wall of a

temple of Serapis. The inscription, written on an oblong portion (2 ft. by 1½) which has been in some degree smoothed, belongs to Roman times, as appears both by the name *Fulvia* which occurs in it, and by the comparatively modern character of the letters. The Σ is written C: the E is replaced by Є. The letters are engraved with a light and easy hand, and are an inch or more long.

Now in the Fitzwilliam Museum, Cambridge.

The three following inscriptions are not figured.

Inscription from Polyrrhenia. See vol. ii. p. 215.

Γέρων Ἐπιφανεὺς
Γορτύνιος.

Epiphaneus seems a new proper name; Epiphanes is the natural form. γέρων appears to be the adjective only: "The aged Epiphaneus of Gortyna."

Inscription from near Sitia.

Ὁ τῆς μονῆς προστάτης.
οὔρεος αἰπυτάτοιο, κόρη λᾶαν δίχα χειρῶν
τμηθέντ' ἀφράστως δεξαμένη σὺ μόνη,
ἵλαθ' ἀποιχομένοις ἱκέταις σοῖς ἠδὲ παροῦσι
νῦν τε καὶ ἐσσομένοις ἁζομένοις σε ὅλως.
ταύταν ἐκ κραδίης αἰτῶ χάριν, ὡς πολύμοχθος
Παντόγαλος Γαβριήλ, παρθενικὴ Μαρίη,
κοὐ μόνος αὐτὰρ ἅπαντες ἀολλέες, ἁζυγὲς ἁγνή,
κύπτοντες κατὰ γῆς σ' ἀντιβολῶμεν [ὁμοῦ.]*
νῦν δ' ἔτι ἐλπωρὴ μερόπων, Μαρίη ἐρατεινή,
δείκνυο καὶ ἡμῶν εὖχος ὅ[λ]ους τε μόγους.

* The inscription has πάντες by a clerical error; the metre and sense require ὁμοῦ or something similar.

Ἀπόκρισις.

εὐμενέτειρα πέλω καὶ ἔσσομαι ὑμετέροισι
μόχθοις, υἱὸν ἐμὸν πάντοτε λισσομένῃ.

An invocation to the Virgin from an abbot named Gabriel, imploring her favour, which she graciously promises. It would seem from the first couplet, which is rather obscure, that he supposed her to have saved him from being crushed by a falling stone.

Captain Spratt has copied an inscription at Plu Monastery, which is contained in Böckh's Corpus Insc. vol. ii. p. 1102, from Pashley, vol. i. p. 290. In the following instances Böckh's readings are helped by Captain Spratt's copy :—

Line 5. . . . . *ικρατου* (B.). *Ποισικράτου*: so Spratt's transcript, which I call S.; but I suspect *Παυσικράτου* is the true reading.

Lines 19, 20. B. conjectures *ἑκατέ | ρων πόλιν καθότι*. This is assuredly not right; S. has *ιου | πεια*. This, again, can hardly be quite correct; *τοὺς | παρ' ἀμφοτέρων* comes nearer the *ductus litterarum*; but every conjecture is quite uncertain: Pashley (P.) read none of S.'s letters.

Line 20. *ὑπ[ὸ] ἑκατέρων* (B.). P. and S. have ΥΠΕΚΑΤΕΡΩΝ, where Π may be the graver's ignorance or vulgarism for Φ.

Line 22. *[πάν]τας* (B.). Either this or *ἅπαντας* is certain: S. has ΝΤΑΣ.

Line 23. *καὶ τῇ [παρὰ] πᾶσιν* (B.). The middle word, of which Pashley did not put down a letter, seems right. S. has ΚΑΠΗΙΙΑ.

Lines 24, 25. *ἐν τῇ [ἐκκλησια, πολει | ὁμολογων [ἑκατ]ερα* (B.). S. reads more letters, thus ΕΝΓΗΙΤΦΞΚΑΤΕΡΩΝ

ΕΓΝΟΕΙΟ|ΟΜΟΛΟΠΟΓΙΜΕΡΑΙ. From this we recover the true reading, *ἐν τῇ ὑφ' ἑκατέρων ἐγνωσμένῃ ἐξ ὁμολόγου ἡμέρᾳ.*

Lines 26, 27. *παρόντων τῶν τε [συνδίκων τῶν παραγε] [ν]ομεν[ω]ν ἀφ' [ἑκατ]έρας πόλεως* (B.). S. has more letters, thus, ΤΕΛΟ///-///ΔΙΓΑ | ΤΟΜΕΝΩΝ. Read *τῶν τε λόγον δικαζομένων* (?).

Lines 27, 28. *καὶ καθίσαντες [πρὸς τῷ βωμῷ τῆς] | Ἀρτέμιδος* (B.). After *καθίσαντες* S. has ΕΝΟΤΙΕ /// /// /// Α. Perhaps we should read *ἐν οὔδει τοῦ δώματος τῆς Ἀρτέμιδος.* The first two words indeed are almost certain.

Line 28. *ἠκούσαμεν* (B., following P.). *διηκούσαμεν* (S., which is no doubt right).

Line 28. *[ἡμέρας]* (B.). S. reads Μ . . Ε, the last of which is probably Σ. B.'s conjecture therefore, which was already tolerably certain, is confirmed by the marble.

Line 29. *τὸν ἄξιον τῆς νυκτός* (B., following P.). Read with S. *τὸ πλεῖον.* It is wonderful that so obvious a reading did not suggest itself to B. or P. Ibid. *χά[ριν τοῦ]* (B.). This speculation seems right. S. cannot read Χ, but further on he adds ΛΗΤΟ, probably for ΑΡΙΝ ΤΟΥ.

Line 32. *[συν]α[γ]αγεῖν* (B.). This also seems right. S. has Σ . . ΑΓ . . . ΕΝΙ. Ibid. *ἀποκαταστη[σαι]* (B.). Probably we should read *ἀποκαταστήσασθαι.* S. has ΑΠΟΚΑΤΑΣ///ΙΟ/// ΑΙ.

Line 33. The readings of B. seem right; S. reads more letters, but many of them must be wrong: he has *πράγματα* written at length for B.'s *γράμματα,* but probably in error. It is evident on comparing P. and S. that the inscription is very faint about this part.

Line 34. *συλλ[υσ]εω[ς]* (B.). Rightly without doubt; but the stone-graver has written, by a clerical error, *συλλεως.* S. has ΣΥΛΛΕΩΕ.

Lines 34, 35. [ἀκύρου γενομέ]νης (B.). Quite rightly, as regards the sense. But S. discovers more letters and strokes, reading M . ETΞIOTMENHΣ, from which we seem to extort ματαιουμένης. This rare verb occurs in Meletius (Medicus) and the LXX.

Line 40. [ἡμεῖν] (B.). Rightly. S. reads H . . . N.

Line 41. τρόπω [κ]ατεῖχον (B.; but P. leaves space for three letters). Read τρόπῳ ἀ[εὶ κ]ατεῖχον. S. has A. This reading is almost certain, but S.'s copy would lead us to suppose a larger lacuna. If anything should be added, it must be ποτε, which would suit very well. But ἀεὶ only is probably right.

Line 41. [τε]λευ[τή]σαντος (B.). S. reads every letter.

Line 43. Ἰτάνιοι καὶ [αἱ ἄλλαι πόλεις] αἱ σύγχ[ωρ]οι (B.). These readings are assuredly wrong. P. leaves space for about 20 letters between Ιτάνιοι καὶ and αι; after which he writes ΣΥΓΧ . . . . OI. S. has ΚΑΙ ΤΗΙ ΑΙ . Ο ΤΩΝ ΦΙΛΩΝ ΕΠΙΟΥ | ΑΙΣΥΝΧΡΟΙΕΝΟΙ. The edge of the stone is broken so as to leave room for a small number of letters between Υ and A. Perhaps the true reading is καὶ τῇ ἄλλῃ τῶν φίλων ἐπικουρίᾳ συνγχρώμενοι. This at least makes good sense and is not much removed from the *ductus litterarum*.

Line 45. με[ιζ]ον[ος] (B.). Rightly, but it is all in the same line: S. has M///TONO. In the next line B.'s ἀνῃρημένης must be changed into a word somewhat longer, probably διανῃρημένης; if not, into κατανῃρημένης.

Line 46. [π]ό[λεω]ς (B.). If this is right, the stone-cutter must have omitted the first letter, to judge by P.'s and S.'s copy, the former of which gives O . . . Σ, the latter Θ . ΩΣ. I suspect that ὅρων is the true reading: Σ and N may easily be confounded, when faint; and the word gives excellent sense.

Line 48. πρεσβευτῶν περὶ (B., following P.). Read, with S., π. τῶν περί.

Line 51. The last words are somewhat doubtful. S. reads

more letters, but they cannot be relied upon. B. may be quite right.

Line 52. *ἑαυτοῖς* (B.). S. reads ΓΗΑΤΤΟΙΣ. It is possible that *γ' ἑαυτοῖς* may be the true reading. *γε* would not be out of place.

Line 53. The supplements of Böckh in the middle of this line are correct, and S. reads more letters than P. He gives *ἔχειν* at full length, the *κ* of *κατέχειν*, and *ίζεσθαι* of *καρπίζεσθαι* (under the form ΙΤΕΣΟΝ). Towards the end of the line, *ὑφ'*, which B. encloses in brackets, is read at length by S.

Line 54. [*δοθείσης κρίσεως τὴν χώραν κατὰ τὴν Ἱεραπυτνίων ἀμφι*]*σβήτησιν* (B.). Not a letter enclosed in brackets appears in P. S. is more fortunate in deciphering, and gives ΙΙ . . Η Ο ΕΙΣΙΙΣ ΔΙΚΑΙΟΛΟΓΙΑΣ ΤΗΝ ΧΩΡΑ, from which we perceive the true reading to be *ἐπιδοθείσης δικαιολογίας τὴν χώραν κατὰ τὴν ἀμφισβήτησιν*. There is hardly room for *Ἱεραπυτνίων*, or indeed for anything else; but possibly *τούτων* may have followed *τήν*.

Line 55. [*μ*]*ε*[*τὰ*] (B.). P. has ΛΕΩ, and S. ΕΩ, which last is without doubt right. Read *ἕως τὸν προειρημένον πόλεμον γενηθῆναι*. The infinitive joined to *ἕως* need not surprise us in late Greek.

Line 57. [*ὡ*]*ς* (B.). This can hardly be right. P. has . . Σ; S. reads ΗΣ. The most probable reading is *πως*.

Line 59. *καὶ ἁ στεφάνα περιαμπ*[*έτιξ*] . *ρθον ἐ* . . . (B.). This is an obscure part of the inscription, but B. is not very fortunate. What follows is correctly given in P., but more fully by S., who reads . ΕΡΙΑΜΠΑΞΕΣΟΡΘΟΝΕ, whence we immediately get *περιαμπὰξ ἐς ὀρθόν*. The lacuna which follows is too great to be supplied with confidence, but *ε*[*ὐθυωρίᾳ ἐπὶ τὸν λ*]*άκκον* seems probable. *περιαμπὰξ*, which is a new word for the lexicons, is formed like *διαμ-*

πάξ. περιαμπέτιξ, which occurs below in this inscription is doubtless an error for περιαμπέριξ, though found both in P. and S.

Ibid. [ὁδὸν τὰν] ἐς (B.). S. has ΟΔ . Ι ΑΙ///ΡΑΝ ΕΣ. Read ὁδὸν τὰν ἄγωσαν ἐς, which is both certain and better. The Doric form for ἄγουσαν occurs below.

Line 61. B.'s supplements at the end seem to be wrong, but it is difficult to extort anything from S.'s letters. ΕΧΟΝ-ΤΑΠΟΡΙΑΤ . . . ΟΣ . ΔΑΝΙ . . . ΕΣΚΑΡΥΜΑΣ. Perhaps ἔχονται, ὅρια τάδε ἔστω, Σέδαμνος ἐς Καρύμας. The last words occur at length below; so that B.'s orthography can be a little corrected.

Line 63. The last part of the line in B. is utterly without sense, and also greatly against S.'s transcript, which runs thus: — ΑΜΕΡΙΑΝΤΑΣΟΔΩΤΑΣΑΣΩ /// ΑΣΑΙ /// ΡΩΑ-ΚΛΕΣ | ΟΛΛΟΝ. From this we seem to obtain [ἐς τὴν δι]αμερίαν τᾶς ὁδῶ τᾶς ἀγώσας εὐθυωρίᾳ ἐς Μόλλον. διαμερία, Dor. for διαμέρεια, is a new word, but formed like πολυμέρεια.

Line 65. After τᾶς [χώρ]ας in S.'s transcript follows ΩΣ, i.e. ὡς, for οὕτως, which makes good sense. He has Σέδαμνος written at length just afterwards.

Line 69. περιοικοδομήμα[σιν] καὶ ἑτέροι[ς π]ε[ριφράγμασιν ὅρων] (B.). S. has the first word *in full*, after which καὶ ἑτέροις πλείοσι, also in full, to which [ν ἔργοις] may be added to complete the sense.

Ibid. περι[εχο]μένο[υ] (B.). S. has ΠΕΡΙ ΛΛ . ΛΟΜΕ-ΝΟΥ, which gives us περιδαιδαλλομένου.

Line 70. [πρὸς] τούτοις [ἀπέδαιξαν] (B.). S. has ΤΟΥ-ΤΟΙΣ Γ ΕΔΕΙΚ - ΧΟΝ, whence we seem to obtain πρὸς τούτοις γ' ἐδείκνυον or perhaps ἔδειξαν.

Line 73. Κόϊντον Φάβιον Λ[αβέω]ν[α οι ἐω]ρακότες (B.). S. has after Φάβιον ΑΙ . . ΙΟΝΕΩ. P. has ΑΠ.ΙΟΝ. Read

Λίκινον: the name occurs as a surname of several gentes; Λαβέωνα is a learned restoration, as Q. Fabius Labeo was concerned with Crete; but it can hardly have been the reading of the inscription. οἱ seems to have been omitted before ἐωρακότες, to judge from S.'s transcript.

Line 75. οὐδὲν (B.). S. has οὐθέν.

Line 76. τῆς . . . [κα]ὶ τῆς Ἐλείας (B.). Read, from S. (who has every letter), τῆς καλουμένης Ἐλείας.

Line 84. κεκριμμένοις (B.). S. has κεκριμένοις, which is no doubt right.

Line 85. This is more complete in S.'s transcript than P.'s. We seem to get from it and P. together, ἵνα τὸ ἐπῳκοδομημένον ὑπὸ Ἱεραπυτνίων χωρίον ἐν τῇ κρινομένῃ χώρᾳ καὶ . . . .

THE END.

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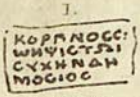
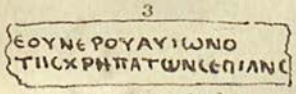


Gnossus.

2.

Smari.

3



Plain of Pediada.

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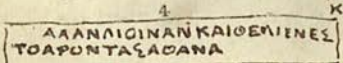

Eremopoli.

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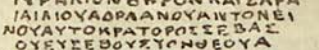

Lyttus.

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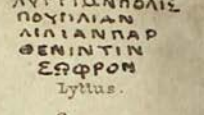

Lyttus.

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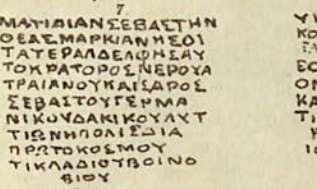

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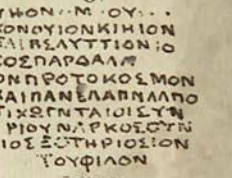

Lyttus.

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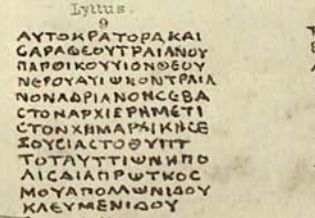

Lyttus.

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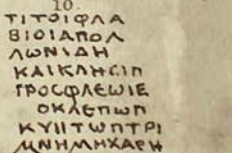

Lyttus.

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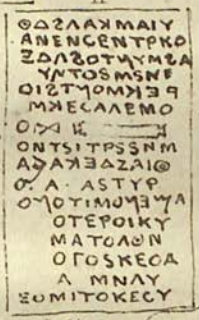

Lyttus.

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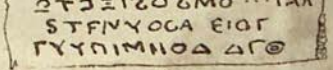
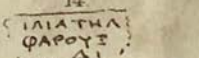


Lyttus.

13

Lyttus.

14



Lyttus

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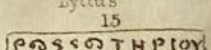

Lyttus.

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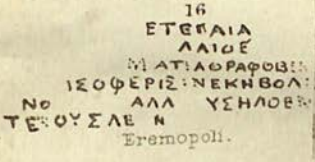
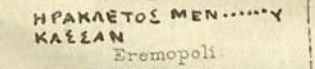


Eremopoli.

17



Eremopoli.

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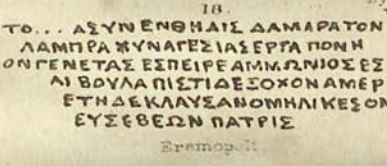

Eremopoli.

20.

Eremopoli.

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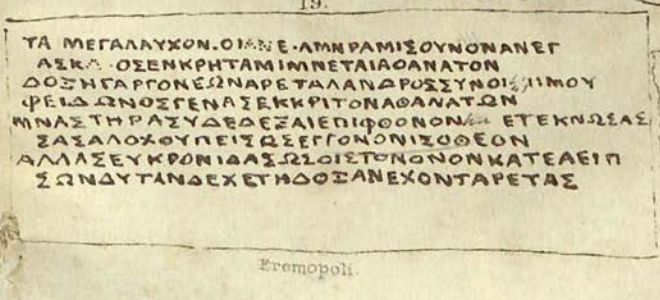

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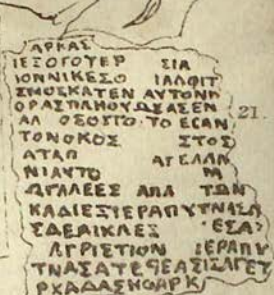


Hierapytna.

1

ΔΟΙΟΥΣ ΣΟΙ ΔΙΟΔΩ
ΡΟΣΕΘΗΚΑΤΟ ΣΩΤΕΡ
ΟΝΕΙΡΟΥΣ
ΑΝΤΙΔΙΠΛΩΝ ΟΣΣΩΝ
ΦΩΤΟΣ ΕΠΑΥΡΑΜΕΝΟΣ

Lebena.

2

Lebena.

3

ΙΑΦΟΣΑΥΣΙΟΣ.Θ..
ΠΤΟΛΕΜΑΙΕ.ΣΤΟΡ
ΤΥΝΙΩΝΠΡ ΘΕΝΟ
ΚΑΙΠΟΛΙΤΑΣ ΑΥΤΟ
ΚΑΙΕΚΓΟΝΟΙ

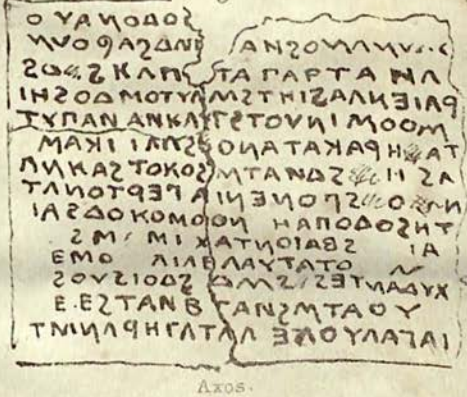
Gortyna.

4

ΘΕΛΙΣΑΗΜΗΤΡΙΚΑΙΚΟΙ
ΛΑΡΚΙΑΑΡΤΕΜΕΙΣ
ΕΚΤΩΝΙΔΙΩΝ

Agia Thoma.

5



Axos.

6

ΒΑΣΙΛΕΑΠΤΟΛΕΜΑΙΟ
ΕΥΡΓΕ

Eleutherna.

7

Eleutherna.

8

ΛΟΞΕΛΑΠΠ...
ΣΩ ΑΔΑΝΠΑΝ
·ΕΛΡΟΞΕΝΟ
ΑΥΤΟΝ ΑΙΓ
ΛΟ..ΛΑΡΠΑΙΟΝΓΑ
ΑΙΟΝΠΡΟΞΕΝΟΝ
Ν..ΑΙΓΕΝΟΣ

Lappa.

9

·ΛΟΞΕΛΑΡΠΑΙ...
ΛΩΝΙΟΝΚΟΙΡΑΝΟΥ
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.....Α
ΚΑΙΓΕΝΟΣ

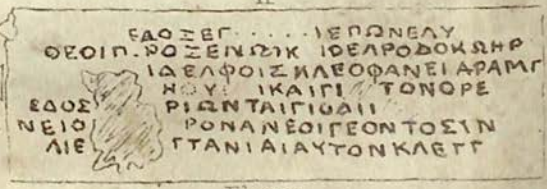
Lappa.

10

ΣΩΤΕΡΑ
ΑΝΔΙΡΙΚΩ

Lappa.

11



Elyros.

12

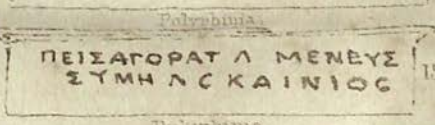
ΝΛ
ΚΑΙΤΩΙΔΑΜΩΙΚΑΙΙΣΟ ΗΣΕΟ
ΣΩΣΙΠΕΑΝΤΙΟΧΟΝΚΑΙΛ ΦΟΚΛ
ΗΝΕΩΣ ΓΕΝΕΟΣΙΕΡΟΠΟΛΙΤΑΣ
ΠΡΩΞΕΝΟΣΗΜΗΝΑΥΤΟΣ ΚΑΙ
ΙΣΟΠΟΛΙΤΕΙΑΝΚΑΙΓΑΣΥΚΑ

Agia Irene - Selino.

13

Roka.

14



Polyrhinia.

15

ΠΕΙΣΑΓΟΡΑΤ Λ ΜΕΝΕΥΣ
ΣΥΜΗ Λ C ΚΑΙΝΙΟΣ

Polyrhinia.

16

ΦΟΥΛΒΙΑ ΔΡΑ
ΚΩΝΟΣ ΕΠΕ
ΣΚΕΥΑΣΕΝ
ΤΟΝ ΝΑΟΝ ΕΚ
ΤΩΝ ΙΔΙΩΝ
ΤΟΥ ΚΥΡΙΟΥ
ΣΑΡΑΠΙΔΟΣ

Poekilassus.

00060547

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